

Annual Report
of the
Department of Agriculture

FOR THE YEAR ENDED 31ST DECEMBER, 1956



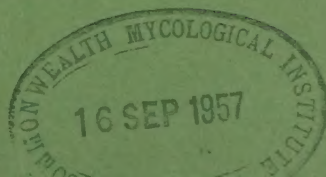
UGANDA PROTECTORATE

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Department of Agriculture

FOR THE YEAR ENDED 31ST DECEMBER, 1956

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NOTE: Full reports on the work of the Research Division of the Department are published in the "Record of Investigations". Only brief progress reports are given in Section VI of this report.

UGANDA PROTECTORATE

DEPARTMENT OF AGRICULTURE

Annual Report

For the year ended 31st December, 1956

I. INTRODUCTION

(a) POLICY

1. The policy of the Department has been stated in detail in the report of the Agricultural Productivity Committee which was published in 1954 and accepted by Government. A review of the progress during the year should be made in the light of this policy the aims of which are:—

(i) To ensure that the cultivators produce sufficient food for themselves, and for the consuming public, of a type and quality to meet their dietetic needs;

(ii) to seek new knowledge by means of co-ordinated research designed to improve land usage and the yields and quality of both crops and livestock;

(iii) to ensure that the land is properly used and the soil adequately conserved;

(iv) to encourage the maximum production of suitable economic crops for export or for local use; while fulfilling policy aims (i) and (iii);

(v) to ensure that the primary marketing of all economic crops and the further marketing of those economic crops which are not handled by statutory boards are carried out as efficiently as possible;

(vi) to introduce improved farming systems which, where suitable, embrace the integration of stock and crops to their mutual advantage;

(vii) to disseminate proven agricultural knowledge by all means available but particularly through agricultural teaching institutions and the activities of departmental field staff.

(b) GENERAL REVIEW

2. The year was a difficult one for annual crops but perennial crops were in general favoured by the rainfall pattern, with the exception of some tea growing areas, where prolonged dry weather reduced plucking and total production.

3. There was no serious food shortage and at the end of the year, as a result of the favourable second rains, there were adequate reserves of grain and of root crops.

4. The 1955/56 cotton crop was larger than the previous crop, both in total production and in yield per acre. Further transfer of resources from cotton growing to Robusta coffee production in response to high coffee prices reduced the contribution made by the B.P.52 cotton areas to the Protectorate crop. In the period 1941/42 to 1945/46 the B.P.52 areas produced, on average, half of the Uganda crop. In the period 1951/52 to 1955/56 the average contribution fell to 35.9%. In spite of substantial increases in cotton acreage and production in the S.47 areas the overall increase in total crop has in the last five years been modest. For every acre lost to cotton growing in the more fertile Buganda Province (and it is the better land which is selected for coffee) it is necessary to plant nearly $1\frac{1}{2}$ acres in the Northern or Eastern Provinces in order to maintain the same level of production. Evidence of the upward trend in production outside Buganda is to be seen in the record crops sold in the West Nile and East Acholi zones in the 1955/56 season. Pedigree seed increase and distribution continued and if all goes well the local B.P.52 variety should be completely replaced in the 1958/59 planting season.

5. During the year there was no evidence that the sharp fall in coffee prices which took place in the middle of 1955 had diminished the interest of the farmer in the crop. Additional planting continued in all Robusta coffee growing areas. The production of another large crop after the record crop in 1955 is a reflection of new acreage coming into bearing and further increases in production can confidently be expected unless prices slump.

6. Inclement weather and losses caused by disease in one district halted the upward trend in tobacco production but in the main air-cured tobacco area a record crop was sold. The output of plantation sugar from the two sugar estates continued to expand and outstripped past records for the second year in succession.

7. The slow but essential work of soil conservation and of maintaining soil fertility was strenuously pressed forward by all field staff. The progress to be seen in one year is not marked but looking back over a longer period it is clear that a real advance has been made, particularly in some of the more densely populated districts.

8. If present agricultural knowledge were applied by farmers a very substantial improvement in production and general well being could be achieved. For this reason a vital function of the Department is to spread new knowledge through instruction and education in its widest sense. Despite the most valuable training work carried out at the Serere and Bukalasa Agricultural Education Centres in the past the need for a higher standard of training to meet the demands of the progressive farmer and to raise the standard of training of departmental staff, had been felt for a number of years. It is, therefore, gratifying to record that the foundation stones of two main farm institutes, which aim eventually to train students to the standard of the National Diploma of Agriculture, were laid during the year.

9. In implementation of the recommendation of the Agricultural Productivity Committee the staff of the Research Division of the Department was greatly strengthened during the year. In recognition of the great contribution which Robusta coffee makes to the total exports of the country a separate research unit to study the crop in all its aspects, including processing, was established. Steps were also taken to serve the Arabica growing area in Bugisu. Advances of the utmost importance were made in the study of the soil and its fertility and the identification of minor mineral deficiencies in certain Uganda soils helped to explain their low productivity. During the year an entomologist was appointed to study the pests of stored agricultural products which are responsible for immense losses to the country each year.

10. The informal Cotton Advisory Committee which was appointed in 1955 met frequently during the year to discuss technical aspects of production. The Committee, which is comprised of technical and trade representatives, proved so successful that a similar committee with parallel functions was set up to deal with coffee production. The new Coffee Advisory Committee met for the first time in June.

II. WEATHER

11. Uganda is blessed with a good total rainfall in most years but the way in which this total amount is distributed between the months of the year has still a profound influence upon crop production. The rains come in two distinct wet seasons which vary in relative importance in different localities and separating them are dry seasons of varying length and intensity. The most significant feature of the rainfall pattern in 1956 was that the dry weather in June and July in the southern half of the Protectorate was more prolonged than usual.

12. In January the customary dry weather was relieved by more local showers than is usually the case but hot dry conditions returned from mid-February until mid-March. Thereafter the weather became progressively less settled and the early rains broke generally during the last few days of March. Throughout April and the first half of May heavy rain fell in all areas. By mid-May in Buganda and the Western Province and by early June elsewhere dry weather had returned and it persisted until late July in Buganda and the Eastern Province and until early August in other parts of the country alleviated only by scattered showers and storms. The second rains were copious, from their onset until October, which was a very wet month in most parts of the country. In the Eastern and Northern Provinces there was little rain during November but in Buganda Province there was enough for planting and crop growth to continue normally and in the Western Province the month was a wet one in all districts. During December local showers and storms were more frequent than usual, particularly in the Eastern Province.

III. FOOD CROPS AND FOOD SUPPLIES

13. Food supplies remained satisfactory throughout the year and such shortages of certain foodstuffs as did occur were easily made good locally, or by sale of maize meal through trade channels.

14. In Buganda the good rains in January and February permitted an early start to be made with the planting of beans and groundnuts. In other areas little planting took place before the breaking of the main rains, apart from the normal dry sowing of finger millet in the Northern and Eastern provinces. Rapid progress was made with grain and other food planting from March onwards, until the early cessation of the spring rains brought the work to a standstill in Buganda, in the second half of May, and in other areas in early June. Yields of all crops, except those of the early sowings, were reduced and the acreages were curtailed. In Buganda Province there was an increase in the acreage under maize, the bulk of which was consumed green. The early sowings of finger millet gave excellent yields in the main grain-eating areas but the later crop suffered from the dry weather in June and July. With the favourable second rains good acreages of root crops were established; the final acreages of sweet potatoes and cassava being adequate in all areas. In the Western Province there was a marked increase in the acreage under cassava and in Kigezi the production of peas was expanded. The sorghum crop in Acholi District yielded well and helped to make good the deficiency of finger millet. In Buganda Province and other plantain growing areas cooking bananas were scarce in July and August, but thereafter supplies increased steadily until the end of the year.

15. The onslaughts of pests and diseases were no worse than usual, but the banana weevil (*Cosmopolites sordidus*) continued to take toll of the plantain crop and plans were made to try to control the pest biologically. There was an increase in the planting of cassava resistant to mosaic disease in all districts which helped to safeguard future food supplies.

16. At the end of the year there were good reserves of root crops in the ground to counterbalance any future shortages of grain and other foods and the prospect was that food supplies would be sufficient until the new harvest was gathered.

IV. ECONOMIC CROPS

(a) COTTON

17. 1955/56 Season.—As the crop year is from 1st May to 30th April, this report deals only with the marketing of the 1955/56 season's crop.

18. In the West Nile Zone there was a record crop of 15,785 bales and in the East Acholi Zone production was 13,501 bales as compared with the previous largest crop of 11,242 bales. These sharp increases in production caused congestion at stores and on the transport systems in these

zones, but elsewhere marketing was conducted smoothly. Unseasonal rain during the marketing season in many zones hindered picking and movement of the crop and a reasonably good standard of grade was maintained only with difficulty. In Buganda Province, in particular, some growers chose to uproot their cotton prematurely to make way for the new season's food crops, and in several zones there was loss of cotton in the field where picking was neglected.

19. The total Protectorate crop including both AR and BR grades amounted to 363,449 bales compared with 299,935 in the previous season.

20. The average yield per acre over the whole crop was 305 lb. of seed cotton as compared with 227 lb. in 1954/55. The following table gives comparative figures of production over the past eleven seasons:—

Table A—Cotton Production, 1945/46–1955/56

Season	Estimated acreage	Bales of lint (400 lb.)	Average yield of seed cotton per acre	Average price to growers (100 lb.) (seed cotton)
			<i>lb.</i>	<i>Shs. cts.</i>
1945–46 ..	1,145,568	227,554	265	16 40
1946–47 ..	1,253,257	231,745	247	18 45
1947–48 ..	1,036,829	170,066	218	20 42
1948–49 ..	1,555,371	391,240	333	29 61
1949–50 ..	1,628,473	339,788	282	31 75
1950–51 ..	1,535,200	346,465	301	43 16
1951–52 ..	1,514,157	380,304	332	47 56
1952–53 ..	1,472,553	319,992	290	48 60
1953–54 ..	1,611,223	397,631	325	49 40
1954–55 ..	1,738,821	299,935	227	58 81
1955–56 ..	1,585,500	363,449	305	52 11

21. Prices paid to growers for clean raw cotton were Shs. 55 and Shs. 54 per 100 lb. for B.P.52 and S.47 growths, respectively. Stained raw cotton was priced at Shs. 20 per 100 lb., except in the West Nile Zone, where Shs. 23 per 100 lb. was paid. The total value of the crop to the growers was approximately £12,600,000.

22. The number of working ginneries during the season was 135 of which number eight were operated by African Growers' Co-operative Unions. All lint cotton was purchased from ginners by the Lint Marketing Board, at prices based on the price to growers for raw cotton and on the buying, ginning and baling costs together with a profit allowance. The total crop was sold on the Kampala auctions, together with all AR cotton seed that was not required for planting.

23. 1956/57 Season.—An intensive campaign to encourage timely planting and improved standards of cultivation was undertaken in all zones. Growers were advised to plant their food crops early and then to make an immediate start with opening land for cotton. Growers, by custom, are reluctant to prepare land and to plant unless there is abundant rain, and

the slackening of the rains in mid-May in Buganda Province, and the comparatively dry weather in June and July in all zones seriously retarded these activities. Strenuous efforts in August to make up for lost time were too late for the optimal planting season and much potential production was thus lost. The total acreage planted was 1,568,539 acres, compared with 1,585,500 in 1955. With good second rains the crop made excellent growth everywhere until late in October, particularly in the northern half of the Protectorate, but dry weather from late October until the end of November reduced the prospects of good yields in parts of the Eastern Province and in the Northern Province. In the Buganda and Western Provinces the weather remained favourable for crop growth during November and December and yields were expected to be remarkably good when taking into consideration the lateness of planting of much of the crop.

24. All seed was dusted with fungicide before planting as a precaution against blackarm disease and this reduced the primary infection substantially. Apart from locally severe outbreaks of *Helopeltis* and the development of secondary blackarm infection in the Acholi zones, attacks by pests and diseases were mild. At the end of the year it was estimated that the total crop would amount to 375,000 bales.

25. *Seed Increase Schemes—B.P.52 Strains.*—As a result of breeding work carried out at the Cotton Research Station of the Empire Cotton Growing Corporation at Namulonge, improved strains of B.P.52 have been made available for increase and distribution. Trials have established that they can be relied upon to produce at least 20% more lint per acre than local B.P.52, whilst in commercial spinning tests the new strains were superior to those at present in general cultivation.

26. Pedigree seed increase in the B.P.52 areas goes through the stages of multiplication at experiment farms up to 70–80 tons of seed, followed by further increase in two stages in Busongora County of Toro District, and subsequent issue to the whole of the Toro and Mubende zones, and thence to the rest of the B.P.52 area.

27. The first new strain of B.P.52, which is N.C.54, was sown in the Kangwali/Kabwoya area of the Bunyoro Zone in the 1955/56 season, and in the West Busongora area in the following season, and it is expected that this cotton will, in turn, produce sufficient seed to plant the remainder of the Toro Zone together with the Mubende Zone in the 1957/58 season. Provided yields are normal this latter crop should give enough seed to plant the Masaka, Bunyoro and Mengo zones in 1958, thus completing the replacement of local B.P.52 with the new strain. Successive annual waves of newer strains will follow N.C.54 by the same route, except that East Busongora will be used instead of the Kangwali/Kabwoya area.

28. The Busongora County is well isolated and gives a high multiplication rate, both desirable characteristics in a seed increase area, but it possesses the disadvantage that the crop is planted late, so that ginning cannot be completed in time for all the seed produced to be used

for planting in the next season; also the area suffers partial failure of crop in some years, owing to lack of rain. For these reasons it was decided to develop a complementary seed increase scheme starting in the north of Bugerere County in Mengo District. After three consecutive multiplications in Bugerere the new seed will be spread westwards to merge with the seed issues emanating from the Busongora seed increase scheme. The North Bugerere area will receive the new seed for planting in 1957.

29. Once pedigree seed has left the experiment farms for commercial increase its purity can no longer be guaranteed, and it is desirable for waves of new strains to follow each other in regular annual succession so that any impurity is flushed out. The N.C.54 strain was followed by N.C.55 which, in turn, will be superseded by N.C.56 and so on, each being superior to its predecessor.

30. *S.47 Strains*.—The S.47 growing area is served by the Serere Experiment Station. At Serere pedigree seed is bulked up to 40 acres from which it is sent for planting in the Mulondo area of the South Teso Segregated Zone, where 200–300 acres are sown. Two further years' multiplication within the segregated zone are necessary after which the seed is issued to other Teso zones according to the quantity available. From the Teso zones the new seed is sent to other zones in the Eastern and Northern provinces.

31. New strains of S.47, called D.E.715/6 and D.E.715/6M, having a lesser propensity to seed coat nep than commercial S.47, are in process of multiplication in the South Teso Segregated Zone but accidental destruction of seed stocks by fire has set the programme back a year.

(b) COFFEE

32. *Bugisu Arabica—1955/56 Season*.—Production amounted to 4,098 tons of parchment and 177 tons of “buni” in the 1955/56 season after a record crop of 6,170 tons of parchment in the previous year. The Bugisu Co-operative Union marketed the whole crop and there was a marked improvement in the Union's efficiency, and that of primary societies, in carrying out this work. The average prices per pound paid to primary societies were:—

No. 1 Parchment	...	Shs. 2/97
No. 2 Parchment	...	Shs. 2/29
Buni	...	Shs. -/89

33. The total cash return to the growers was £1,349,576, which was the second largest amount ever received by growers in Bugisu for their coffee.

34. From liquoring reports received, classifications were higher than in the previous year, but the standard of fermenting and washing still left room for much improvement. Failure to turn coffee adequately during

drying also prevented higher classifications being achieved. The average prices obtained by the Union per cwt., f.o.r. Mbale, were:—

No. 1 Parchment	...	Shs. 392/38
No. 2 Parchment	...	Shs. 332/64
Buni	...	Shs. 121/13

35. The coffee was milled in Nairobi and the whole crop (apart from 68 tons of clean coffee sold locally) was sold at the Nairobi auctions. Arrangements for the erection of a coffee curing factory in Mbale were completed during the year, and the site was handed over to the building contractors in December.

36. 1956/57 Season.—The unusual rains in January and February helped to maintain the trees in good condition. Subsequently the weather was generally favourable, the break in the rains in June and July being shorter and less marked in the coffee areas than elsewhere in the district. There was a long flowering period from January to May and a good crop was set. The trees were pruned by trained gangs and a good standard of work was achieved. The cost of the work was high, the total amount paid to pruning gangs by the Co-operative Union being £20,415. The demand for seedlings for planting was keen and 2,140,238 were sold to growers. From checks carried out on the young transplants the survival rate was estimated at over 90%. Pest control against *Antestia*, Lace Bug, *Bixadus* and Root Mealy Bug continued. Over 1,300 acres were successfully treated with pyrethrum powder against *Antestia* and 22 acres were dusted with a proprietary compound "Pybucide" to control Lace Bug, small outbreaks of which continued to occur in all counties. There was an increase in Root Mealy Bug and trials were made seeking an effective method of control. Losses from pests and diseases were no greater than usual. Picking started in June and by the end of the year the co-operative union had collected 3,102 tons of parchment, the crop forecast for the season being 5,500 tons. Details of the last twelve seasons' crops are shown in the following table:—

Table B—Bugisu Arabica Coffee

Season	Production (Parchment)	Estimated value to growers
	<i>Tons</i>	<i>£</i>
1944-45 ..	2,705	73,740
1945-46 ..	2,817	97,169
1946-47 ..	3,058	107,215
1947-48 ..	2,996	121,692
1948-49 ..	2,857	173,799
1949-50 ..	2,852	184,859
1950-51 ..	2,896	442,104
1951-52 ..	2,203	377,575
1952-53 ..	2,307	633,040
1953-54 ..	3,122	1,231,791
1954-55 ..	6,170	2,015,662
1955-56 ..	4,098	1,349,576*

* Includes value of 177 tons of "buni".

37. *African-grown Coffee other than Bugisu Arabica*.—The total production of African-grown coffee other than that produced in Bugisu District amounted to 48,498 tons of clean coffee which was mainly Robusta, but included a small amount of Arabica coffee grown in the Buganda and the Northern and Western Provinces. This was the second largest crop ever produced and followed the record crop of 60,160 tons in 1955. Prices per pound paid to growers at curing works throughout the year were:—

Native Robusta unhulled	... Shs. -/75
Native Robusta hulled	... Shs. 1/50
Native Arabica unhulled	... Shs. -/90
Native Arabica hulled	... Shs. 2/-

38. The value of the crop to producers was estimated to be £7,991,619. Twelve curing works and seven licensed hulleries processed the crop. Six of the curing works were African-owned enterprises, established under the Coffee Industry Ordinance, 1953, and all worked in 1956. Marketing of clean coffee was the responsibility of the Coffee Industry Board and the whole crop was sold on the Kampala auctions. Prices were fairly steady throughout the year, ranging from Shs. 218/50 to Shs. 255 per cwt. for grade 10; Shs. 210 to Shs. 253 for grade 15 and Shs. 207/50 to Shs. 246/50 for grade 25.

39. In Buganda Province, which is by far the most important producing area, there was no evidence that the fall in price, which took place in the middle of 1955, had had any adverse effect on production. There is plenty of scope for improving cultural practices, and in some areas improvements were made. The use of coffee husks as a mulch increased noticeably and curing works and hulleries had little difficulty in disposing of their husks, especially near Kampala. In Mubende and parts of Masaka District many coffee plots were grass-mulched, but this measure is less popular elsewhere in the Province, owing to the high cost and to fears of arson. Planting was extended in all coffee growing areas and 42 nurseries run by the Agricultural Services were insufficient to meet all demands from growers. In all districts of the Province considerable difficulty was experienced with musty coffee and steps were taken to encourage the adoption of better drying methods, particularly the use of trays.

40. In the Western Province, Toro District is the main coffee growing area, but increasing interest is being shown in the crop in Ankole District. Seedling issues for planting in 1956 were:—

District	Robusta	Arabica
Ankole ..	439,991	90,562
Toro ..	19,068	8,228
Bunyoro ..	43,786	—
Kigezi ..	1,800	900
TOTALS ..	504,645	99,690

41. In the Eastern Province Robusta coffee is grown mainly in Busoga District. Growers have taken more interest in the crop in recent years and recorded sales for 1956 were 341 tons of dried cherry. One ton of dried cherry was purchased in Bukedi District.

42. Coffee production in the Northern Province is confined to the West Nile District where Arabica coffee is grown in the highlands and Robusta in the middle altitudes above the escarpment. Approximately four tons of rough-hulled Arabica coffee were sold and 18 cwt. of Robusta dried cherry. A total of 60,709 seedlings of Robusta and 14,164 of Arabica were sold to growers from official nurseries. The supplies of seedlings were quite inadequate to meet the demand, and steps will be taken to increase supplies in future.

43. Details of total production during the last ten years are as follows:—

Table C—African Coffee Production
(Other than Bugisu Coffee)

	1947	1948	1949	1950	1951	1952	1953	1954	1955	1956
Cured Coffee (tons) ..	17,238	31,142	18,351	26,263	34,362	29,563	26,998	25,196	60,160	48,498

44. *Estate Coffee Production.*—During the 1955/56 season the estate production of Robusta coffee was 8,941 tons of clean coffee which was an increase of some 1,200 tons over that of the previous season. In addition 1,258 tons of clean Arabica coffee were sold by estates which was 60% more than in the previous year. The estimated value of the coffee sold was £2,235,250 and £389,980 for Robusta and Arabica, respectively.

45. The following table shows the production and estimated value of Robusta coffee sold by estates during the last nine seasons:—

Table D—Estate Coffee Production

Season	Production	Gross Value
	<i>Tons</i>	<i>£</i>
1947-48 ..	3,592	281,678
1948-49 ..	2,581	227,247
1949-50 ..	3,060	616,363
1950-51 ..	3,846	940,504
1951-52 ..	4,851	1,425,669
1952-53 ..	5,921	1,846,697
1953-54 ..	5,277	2,100,993
1954-55 ..	7,730	1,944,790
1955-56 ..	8,941	2,235,250

(c) TOBACCO

46. *Flue-cured.*—The cultivation of this crop is confined to the West Nile, Acholi and Lango districts of the Northern Province and Kigezi District of the Western Province. Most of the crop is bought from growers

as green leaf, but a small amount of leaf is cured by individual farmers and farmers' groups.

47. In the Northern Province green leaf was bought by the East African Tobacco Company which maintains a buying and curing organisation in the Acholi and West Nile Districts. In the Kigezi District the whole crop was bought as green leaf by Kigezi Industries Limited who increased their curing capacity to 12 barns. In all districts seedlings are issued free to growers by the firm buying the green leaf. Growers who cure their own leaf raise their own seedlings.

48. In the West Nile District the total acreage planted for green leaf production was 1,802 compared with 1,617 acres in 1955. Planting continued from April to July. A good take was obtained with the early and mid-season plantings, but the late crop suffered from the dry weather. Total purchases of green leaf were 4,208,318 lb. from which 436,708 lb. of graded cured leaf were produced. Green leaf was bought, as in all other districts, in three grades at 10, 8 and 3 cents per pound, respectively.

49. Two co-operative organisations grew and cured their own leaf in the West Nile District during the year. The Olili Society planted 40 acres and produced 7,281 lb. of cured leaf which was sold to the East African Tobacco Company for Shs. 14,723/15. The membership of the Society was 48. The Otrevu Society planted 24 acres of tobacco and cured 6,445 lb. of saleable leaf for which it received Shs 13,114. The membership of the Society was 37.

50. In Acholi District a hitherto undescribed seedling disease resulted in less and later planting than usual. The total acreage planted for green leaf production was 534 acres compared with 942 in 1955. The early plantings grew well and gave good yields, but dry weather in June and July harmed the bulk of the crop. The total purchases of green leaf were 1,132,932 lb. from which 210,242 lb. of cured leaf were produced.

51. Total production of cured leaf by farmers in Acholi District was 35,159 lb. of graded leaf and the area planted was 108 acres. The greater part of the leaf came from one individual farmer, who grew 67 acres on his own account and by arrangement with the East African Tobacco Company purchased and cured leaf from eleven acres grown by neighbouring farmers: he sold 26,708 lb. of leaf to the company. Another farmer who started tobacco curing during the year, after building his own barn with the assistance of the East African Tobacco Company, grew 25 acres of tobacco from which he cured 7,451 lb. of saleable leaf. In addition to these two farmers, a group of farmers took over a curing barn, on trial, from the East African Tobacco Company at a peppercorn rent. The group planted five acres of tobacco and with the technical advice of the company they cured 1,000 lb. of leaf.

52. In Lango District tobacco is grown by a co-operative society which bought three curing barns from the East African Tobacco Company. The society did not have a very successful year, chiefly because of eelworm

infection of the seed-beds. The early plantings did well but the rest of the crop gave light yields. The total production by the society, for the year, was only 1,999 lb. of saleable leaf.

53. In Kigezi District flue-cured tobacco production was extended into two new sub-counties in Kinkizi County and the total acreage for the two crops rose to 372 acres, compared with 201 acres in 1955. Total sales of green leaf were 814,180 lb. compared with 327,040 lb. in 1955.

54. Full details of production in all districts during 1956, compared with the figures of the previous year, are given below:—

Table E—Flue-Cured Tobacco Production

AREA	ACREAGE		PRODUCTION (Green Leaf)		PRODUCTION (Cured Leaf)	
	1955	1956	1955	1956	1955	1956
West Nile ..	1,657	1,866	<i>Tons</i> 1,889	<i>Tons</i> 1,878	<i>Tons</i> 5	<i>Tons</i> 6
Acholi ..	1,002	642	950	506	8	16
Lango ..	19	21	—	—	3	1
Kigezi ..	201	372	146*	363†	—	—
TOTAL ..	2,879	2,901	2,985	2,747	16	23

* 1954 Autumn and 1955 Spring Crops.

† 1955 Autumn and 1956 Spring Crops.

55. *Air-Cured*.—This type of tobacco is grown in the West Nile, Mubende and Kigezi districts, of which the most important is the West Nile District, where a record crop was sold.

56. In West Nile District transplanting took place from April to mid-June and 1,268 acres were planted during good weather. Most of the crop was well established before the dry weather set in during June and July and thereafter the weather again favoured the crop. Much use was made of cattle manure, either by planting on old cattle kraal sites or by applying the manure to the plots. Some excellent quality leaf was produced and the total crop amounted to 777,966 lb. of cured leaf, which represents an average yield of 613 lb. per acre. The previous record crop was in 1955 when 597,449 lb. of cured leaf were grown. The variety planted was Heavy Western. The prices paid to growers (in all districts) were Sh. 1 per lb. for Grade I leaf and 70 cents for Grade II.

57. There was an increase in acreage in Mubende District, but owing to lack of rain during the main growing period the yields per acre fell from 587 lb. in 1955 to 408 lb. The area planted was 585 acres compared with 310 in 1955 and total production was 238,999 lb. of which 81% was purchased as Grade I. In 1955, 182,019 lb. of cured leaf were sold.

58. In Kigezi District there was a fall in acreage as the crop was not grown in areas where it had not done well in the past. The 1955 autumn crop which was sold in early 1956 produced 53,203 lb. of cured leaf from 350 acres; the average yield per acre being 152 lb. In the spring of 1956,

141 acres were established and made satisfactory growth but recorded sales totalled 21,505 lb. of which only 2,443 lb. were Grade I. It is known that large quantities were sold to unlicensed buyers.

59. Although the quality of Uganda air-cured leaf is very satisfactory there are indications that the demand for this type of tobacco is limited.

60. Details of production in the last two years are given below:—

Table F—Air-Cured Tobacco Production

AREA	ACREAGE		PRODUCTION (Cured Leaf)	
	1955	1956	1955	1956
			<i>Tons</i>	<i>Tons</i>
West Nile ..	1,198	1,268	266	347
Kigezi ..	540	278	24*	33†
Mubende ..	310	585	81	107
TOTAL ..	2,048	2,131	371	487

* 1954 Autumn and 1955 Spring Crop.

† 1955 Autumn and 1956 Spring Crop.

61. *Fire-Cured*.—The crop in Bunyoro District was estimated to be 3,751 acres, compared with 3,497 acres in 1955. Transplanting began in late March and good progress was made until scarcity of rain in the first half of April held up the work. Heavy rain in the second half of April and the first half of May enabled planting to be completed rapidly. The dry weather in June and July checked growth, but good second rains later improved the condition of the crop. Marketing started in October and the total sales were 1,785,135 lb. of cured leaf of which 78% was Grade I. The prices paid to growers were Sh. 1 and 70 cents per lb. for Grades I and II, respectively, in all districts.

62. There was an increase in the number of tobacco farmers in Mubende District and the acreage planted was 1,031 acres compared with 979 acres in 1955. Planting and early growth of the crop were good, but, as in Bunyoro District, the early and prolonged break in the rains reduced the yields. The total crop amounted to 358,264 lb. of cured leaf, compared with 459,314 lb. in 1955.

63. Details of production in Bunyoro and Mubende Districts during 1956, compared with the figures of the previous season, are given below:—

Table G—Fire-Cured Tobacco Production

AREA	ACREAGE		PRODUCTION (Cured Leaf)	
	1955	1956	1955	1956
			<i>Tons</i>	<i>Tons</i>
Bunyoro ..	3,497	3,751	862	797
Mubende ..	979	1,031	205	160
TOTAL ..	4,476	4,782	1,067	957

(d) OILSEEDS

64. *Cotton Seed*.—Seed produced from the 1955/56 cotton crop amounted to 130,800 tons of AR seed, of which quantity 110,500 tons were bought by oil millers and exporters at auctions held in Kampala by the Lint Marketing Board. The average prices were Shs. 400 per ton for B.P.52 and Shs. 376 per ton for S.47 seed. The balance of the seed was retained for planting.

65. *Groundnuts*.—There was a fall in acreage in the Eastern Province which is the main growing area, but yields per acre were higher than in 1955. As statutory control is not exercised over the marketing of the crop, precise figures of the amounts sold are not available. It is estimated that 14,000 tons of shelled nuts were sold by growers in the Province, of which approximately 11,000 tons were produced in the Busoga District. Large acreages continued to be grown in other provinces for home consumption, but the amounts offered for sale at markets were small.

66. *Castor Seed*.—Prices fluctuated freely during the year and picking was on a small scale. It is estimated that 400 tons of seed were sold in Buganda Province.

67. *Sunflower Seed*.—In the West Nile District the price to growers was not high enough to stimulate expansion of the crop. Sales amounted to 120 tons and the price to the growers was 16 cents per pound.

(e) MAIZE

68. High prices in 1955 encouraged growers to plant more maize in 1956 in Buganda Province and the estimated acreage under maize rose to 211,487 acres compared with 121,148 acres in the previous year. The crop was planted early and most of it suffered little from the dry weather in June and July. Large quantities were consumed green. In the Eastern Province there was a slight fall in acreage. Yields were about average, but, as in the Buganda Province, much was eaten green. In the Western Province a normal acreage was sown but yields were low and very little was offered for sale. The total marketable surplus was assessed at 65,000 tons of grain but as no statutory control is exercised over marketing, it is not known what quantity was sold. The average price to the grower in Buganda and the Eastern Province was eight cents per pound.

(f) TEA

69. The acreage planted to the end of 1955 was 10,059 acres and during 1956, six licences sanctioning the planting of a further 1,470 acres were issued. The total planted acreage at the end of 1956 was 11,920. Production during the year amounted to 6,801,314 lb. of made tea compared with 6,959,742 in 1955.

(g) SUGAR

70. The acreage of mature cane harvested on the two sugar estates was 16,684. The weather was again favourable and a mean yield of 4.13 tons per acre of plantation sugar was obtained. The total production amounted

to 69,037 tons, compared with 65,130 in 1955. Exports to Kenya and Tanganyika totalled 12,933 tons.

(h) SISAL

71. Very little planting was done on the only sisal estate, near Masindi Port in the Bunyoro District. The total planted acreage was 7,000 of which 1,400 acres were harvested during the year. The total production was 630 tons of sisal and tow which was valued at £29,925 ex factory.

V. AGRICULTURAL DEVELOPMENT AND EXTENSION WORK

(a) SOIL AND WATER CONSERVATION

72. A great proportion of the time of the field staff of the Department was given to propaganda to encourage the proper protection of both cultivated and grazing areas against erosion. The campaign was directed at the entire population of cultivators and stock owners. In all districts agricultural shield competitions stimulated rivalry between administrative subdivisions to improve soil conservation. Other avenues of approach included newsletters to chiefs, wireless talks, pamphlets and posters, and demonstrations at county shows. The progress made in any one year, and 1956 was no exception, is not spectacular, but looking back over the last decade it is clear that much has been achieved in conserving the resources of the soil and in awakening cultivators to the need for it. It is gratifying that the greatest advances have been made in some of the most densely populated areas.

73. In Mengo and Mubende Districts of Buganda Province, many miles of new bunds, planted with *paspalum* grass, were made, in both annual and perennial crops. The least progress was in Masaka District where the people have long been unreasoningly prejudiced against the planting of *paspalum* grass, but there were signs that this attitude was slowly yielding to wiser counsels.

74. More grass stopwash lines were left between cultivated plots in the Eastern Province and fewer were obliterated in subsequent tillage. In Bugisu District more *paspalum* bunds were constructed, particularly on the steeper slopes. In Teso District, where a high standard of soil conservation has been practised for many years, the main development was realignment of grass stopwash lines more closely to the contour. In all districts, many house compounds were planted with grass, and cattle tracks and roadsides were protected against erosion.

75. In Ankole District the local councils made a very creditable effort to deal with erosion and overgrazing in the more hilly parts of the district; this work included controlling grass burning and rehabilitating eroded cattle tracks. In the same district the standard of mulching of bananas and coffee was high. Progress was generally slow in Bunyoro District, except where mechanical cultivation units of the Department operated. The block layout with grass stopwash lines between cultivated strips, upon the establishment of which the hire of mechanical cultivation is made conditional, has been accepted as customary practice and farmers on adjacent

land have started to adopt it. Soil conservation in Kigezi District was far ahead of that elsewhere in the Province. During the year tie-bunds were increased and a start was made in some areas with building terraces faced with stone. In Toro District a limited number of individual holdings was banded.

76. Steady progress continued in Lango, Acholi and West Nile Districts of the Northern Province. With the valuable support of the chiefs, special attention was given to preventing the erosion of the very light soils in the Mount Otze area in West Nile District. In Acholi and Lango Districts land mechanically cultivated by the Special Development Section of the Department served as a demonstration which promoted the soil conservation drive.

77. In Karamoja District the Natural Resources Sub-Committee of the District Team has embarked upon a comprehensive programme for the rehabilitation of the deteriorated areas. This work includes improvement of water supplies in order to obtain a better distribution of the animal and human populations and also a comprehensive series of investigations to find practical methods of restoring a stable grass cover and eradicating bush in the overgrazed and eroded areas. In the course of the year the sub-committee closed to stock large areas of overgrazed land, as part of the rehabilitation programme. Cultivators were encouraged to improve upon the indigenous system of trash bunds which is practised in parts of the district.

(b) AGRICULTURAL EDUCATION

78. *Farm Institutes*.—His Excellency the Governor laid the foundation stones of the Bukalasa Farm Institute in Mengo District on the 27th September and of the Arapai Institute in Teso District on 17th November. The locality of Bukalasa is representative of the elephant grass zone and that of Arapai of the short grass areas and they will receive students, respectively, from these two main ecological divisions of the country. Bukalasa expects to open its doors early in February 1957, although some buildings will remain unfinished at that date. The Arapai Farm Institute will be ready for occupation in 1957 but will not accept students until the beginning of the academic year in February 1958.

79. The objects of the two main Farm Institutes are:—

(i) To enable (a) students who wish to farm on their own account, and (b) those who desire agricultural training with a view to seeking employment other than in Government service, to obtain a thorough grounding in farm practice and management;

(ii) by a system of common basic training, designed to foster co-operation, to produce field staff for the Agricultural and Veterinary Departments with a sound knowledge of agriculture and capable of giving sound and practical advice to farmers;

(iii) to provide the agricultural training for teaching staff for additional District Farm Institutes.

(iv) to train teachers in agriculture to a level which will enable them to teach the subject in schools to a School Certificate standard or at Teacher Training Colleges.

80. With these aims in view the main Farm Institutes will provide a two-year course of basic agricultural training. There will be one course of training common to all students which will have a practical bias, but with sufficient theory to enable students to understand the reasons for the agricultural practices and operations undertaken.

81. Students selected to enter Government service will, when they have completed their course at the main Farm Institutes, go to the Agricultural or Veterinary Department Training Schools for a further year's specialist training.

82. It is intended that the Institutes should eventually be autonomous bodies with their own Board of Governors and should control their own funds. For the initial period, however, responsibility for their direction will lie with the Director of Agriculture, advised by an Advisory Board appointed for each Institute.

83. It is the ultimate aim of the Institutes to award a diploma comparable with the National Diploma of Agriculture in the United Kingdom to students who satisfactorily complete their courses. This cannot be achieved until the School Certificate standard is the minimum qualification for entry. In the meantime a Junior Secondary Leaving Certificate will be accepted as the minimum standard of entry and a certificate will be awarded for the successful completion of the two years' course.

84. In addition to the two main Farm Institutes it is proposed ultimately to establish eight District Farm Institutes, which will provide courses of training of one year's duration for farmers' sons and shorter courses for chiefs, cultivators, prison warders and others.

85. *Farm Schools.*—These institutions provide a two years post-primary practical course in agriculture and cater primarily for boys academically unsuited for higher studies, who intend to take up farming as a livelihood. There are three such schools in the Northern Province, at Aler in Lango District, Gulu in Acholi District and Koboko in the West Nile District. During the year a fourth school was started at Amucu in Teso District, and consideration is being given to establishing a fifth in Busoga District. The schools will be complementary to the training to be provided at District Farm Institutes.

86. There was a marked improvement in the running of the Gulu Farm School in 1956 and a promising group of six boys completed their training at the end of the year. They have already started to establish a group farm in Acholi District.

87. The Aler Farm School suffered a setback as a result of damage done by demonstrators during the recent disturbances in Lango District. At the end of the year the school was running normally but a number of the boys who dispersed during the disturbances had not returned to continue their studies. Boys leaving the school on completion of their training in December met with opposition in obtaining land to start their holdings. Three groups of boys which left the school at the end of 1954 continued to farm successfully and increased their income from the sale of cotton and surplus food crops.

88. *Training Centres.*—With the development of the Farm Institutes training of departmental staff at Bukalasa and Serere Training Centres ceased during the last quarter of the year, when trainees left to complete their training under the direction of the Agricultural Officers in charge of their respective districts. The usual short courses for chiefs, cultivators, and school teachers, were continued. At Bukalasa some 380 people, including a party of Community Development Assistants, attended these courses. At Serere 320 people attended the equivalent courses held at that centre. These short courses, particularly those for chiefs and farmers, are considered to be very valuable and it will be necessary to make *ad hoc* arrangements for them until this work is taken over by the District Farm Institutes.

89. *General.*—In addition to the training given at the Bukalasa and Serere Centres short local courses were held in the districts for chiefs, farmers, members of co-operative societies and schoolmasters. Assistance was given in the layout of school gardens and lectures on agriculture were delivered in schools. As part of a campaign to improve the standard of departmental field staff, refresher courses were also held in the districts for Agricultural Assistants. Arrangements were made for visits by groups of farmers to see demonstration areas, experiment farms and the holdings of progressive farmers. Several parties of gombolola councillors and farmers made trips to Kenya to see the progress there in improved farming methods, particularly farm planning. Agricultural shows proved extremely popular and played an important role in encouraging the adoption of improved agricultural methods. Agricultural competitions have become annual events in most districts and marks are awarded for all aspects of better farming. Judging of these competitions is onerous, but their influence is widespread and the time taken is thought to be well spent. The winning administrative subdivision is often used as an example to be copied, so adding further to the prestige of achievement.

(c) ANIMAL HUSBANDRY AND PASTURE WORK

90. The policy of the Department aims, in areas where it is appropriate, at the integration of crops and livestock in a balanced system of mixed farming. This policy is put into practice on departmental farms, some of which have now been running over 20 years, under a system of

alternate husbandry with three years cropping and three years resting under grass. The practice is supported by experimental evidence which has shown that the grazing animal does not impair regeneration of soil fertility under grass, and there are indications that under controlled management it may be increased.

91. Communal grazing is still customary in most parts of the Protectorate and there is little appreciation of the need to treat grass as a crop or to integrate stock into the farming system. There are, however, signs of a movement from communal grazing to individual herding and so to the beginnings of mixed farming. In Buganda Province in the more heavily populated areas many herds are now housed and supplementary food is commonly given. Every year more farmers make use of kraal manure to improve their banana gardens and coffee plots, and others erect wire fencing to concentrate dung on a piece of land before bringing it under the plough. Fencing is also employed to control the use of permanent grazing which is also improved by digging out weeds and unproductive grasses such as *Cymbopogon afronardus* which is the dominant grass on certain classes of land. A few farmers have improved their pasture by sowing Rhodes grass (*Chloris gayana*). Evidence of the demand for fencing materials is seen in the number of shops now selling wire.

92. In the Northern Province more farmers are night paddocking their stock. During 1956, 115 acres were enclosed for this purpose in paddocks mostly of three to four acres in extent. Although many of these are little more than improved kraals they afford a limited amount of grazing for the animals before they are taken to communal grazing grounds. In a few cases farmers have ploughed their old night paddocks and have seen the beneficial effects of the manuring.

93. A start was made in the Western Province in sowing pastures, but efforts to introduce night paddocking and rotational grazing met with only limited success. In Bufumbira County of Kigezi District, groups of neighbouring farmers divided the communal grazing lands into a series of paddocks by stone walls, for rotational use.

94. In the Eastern Province night paddocking was practised on prison farms and at one farm a movable kraal was successfully demonstrated. The enclosed area was subsequently cropped with cotton which yielded well above the average for the farm. The movable kraal is made of barbed wire and wooden posts and is moved every three to four weeks across the resting land. This practice is becoming increasingly popular in Teso District and has the big advantage that it is far cheaper than fencing whole fields, whilst the beneficial effects on crops, being intensified, are much more readily seen by the farmer. This method of introducing the grazing animal into the farming system may have wide application, and experiments have been laid down to test the extent to which fertility can be transferred to the arable land from the grazing grounds, without exploitation of the latter.

(d) IRRIGATION AND SWAMP RECLAMATION

95. In Karamoja the Nadunget flood irrigation scheme was handed over to the Natural Resources Section of the District Team for seed increase and other grassland work in connection with rehabilitation trials in the over-grazed areas in the district. The Ngiminito scheme was maintained as before. Flooding was successfully controlled and good yields were obtained. The local people rented all plots made available to them and grew millet and sorghum successfully. It is clear that flood irrigation is unlikely to be attractive to many Karamojong in the near future and it would be an error of policy to neglect the purely agricultural potential of the district and the contribution that formal agriculture might make to the solution of the pastoral problems. It is, therefore, intended to continue the flood irrigation scheme without expansion to preserve local knowledge of the techniques so that the method can be applied, should demand for it develop.

96. The irrigation scheme at Namalu which is watered by a permanent stream from Mount Debasien in Karamoja continued to produce a wide range of crops. Rice, finger millet and maize were grown successfully as well as small plots of European vegetables.

97. There are three small areas in the Agoro locality of East Acholi District which are brought under an indigenous system of irrigation during times of threatened food shortage. During the year only a portion of the irrigated area was used. The chief crop grown was sweet potatoes, which besides producing food will afford a valuable source of planting material in 1957.

(e) RESETTLEMENT

98. The resettlement schemes relieve the pressure of population in the areas whence the settlers have moved and permit reorganisation of cultivation there on sound farming lines. The resettlement areas are carefully surveyed and planned in advance and the settlers are required to conform to minimum standards of good farming, aimed at preserving the fertility of the land. The reception areas are provided with services such as roads, water and game control and in due course with medical dispensaries, schools and shops. The essential objective is to achieve a redistribution of the population so as to render both the land and the efforts of the people more productive. Even the small measure of restraint to which they have been subjected has met with opposition from settlers initially, but in general this has been overcome once they have started to develop their holdings in earnest.

99. During 1956 the movement of people from the south of Kigezi District to the resettlement areas in the north of the District and to Ankole and Toro Districts was on a comparatively small scale. The demand for contract labour in other districts is thought to have been one factor which limited resettlement. A total of 145 men, women and children migrated to the north of Kigezi District and 828 went to Ankole District. In Toro

District movement into the Bigodi resettlement area was extremely slow at the beginning of the year, but the numbers gradually increased until by the end of the year 655 people had been settled.

100. In Amuria County of Teso District where haphazard infiltration of families from the more densely populated parts of the District had hitherto taken place, systematic settlement was initiated. The selected area was divided into blocks of 24 acres for cultivation, village areas were demarcated and land was allocated for communal grazing. In the course of the year 215 families took up farms in the resettlement area.

(f) LIAISON WITH AFRICAN LOCAL GOVERNMENTS

101. Close liaison was maintained in all matters affecting agriculture with African Local Governments and campaigns such as those for the early planting of cotton and conservation of soil fertility were conducted jointly. It was a matter for regret that the Toro Native Government declined to support the introduction of a bye-law for the orderly settlement of the present unpopulated areas. In general, African Local Governments played an active part in agricultural improvement and enacted a variety of agricultural bye-laws which were wisely enforced.

102. During the year two Senior Assistant Agricultural Officers were elected to lead their respective local governments. While their secondment caused temporary staffing difficulties in the Department, it is confidently expected that more will be gained from these men by greater understanding of agricultural problems in the District Councils.

103. On 1st July the responsibility for the field services of the Department in Buganda was transferred to the Buganda Government. All departmental field staff from the Provincial Agricultural Officer to the Agricultural Assistant accepted secondment or transfer to the African government. Delegation of responsibility for the field services of the Department was also made to the District Councils in Acholi and Bunyoro districts from 1st October, 1956.

(g) MECHANICAL CULTIVATION

104. *Policy.*—The policy of the Department, through its Special Development Section, is to extend the use of mechanical cultivation along the following lines:—

(1) To maintain existing contract hire services and to extend them on a limited scale whilst aiming to raise hire charges progressively to equate them with operating costs, including depreciation;

(2) to encourage commercial enterprise to provide approved contract services. (In spite of efforts to encourage this development no commercial concerns have so far shown any interest in entering this field);

(3) to give active assistance to farmers who wish to own and use their own equipment either as individuals, or in co-operative societies or

other groups, by training them in the operation and maintenance of tractors and ancillary implements.

105. *Contract Hire Service*.—In order to lower operating costs, each area of operation was served by one make of tractor with standard equipment and implements. In the course of this reorganisation all diesel versions of tractors were withdrawn as they had been found more difficult to maintain than the simpler standard types running on paraffin or petrol. Research on diesel tractors will, nevertheless, be continued.

106. Four contract hire centres were operated in Buganda Province and single centres in Toro, Bunyoro, Acholi, Lango and Busoga Districts. The only new area was in South Lango, based on Ibuje (the work in the north of this District is treated as part of the Acholi District centre, based on Gulu). As in previous years the greatest demand was for initial cultivation. It would appear that farmers can provide the labour needed for planting, weeding and harvesting much more easily than that for opening land and for seed-bed preparation. A total of 43 tractors were in use during the year of which 28 were Ferguson and ten Farmall B.M. Details of the acreages cultivated on contract were:—

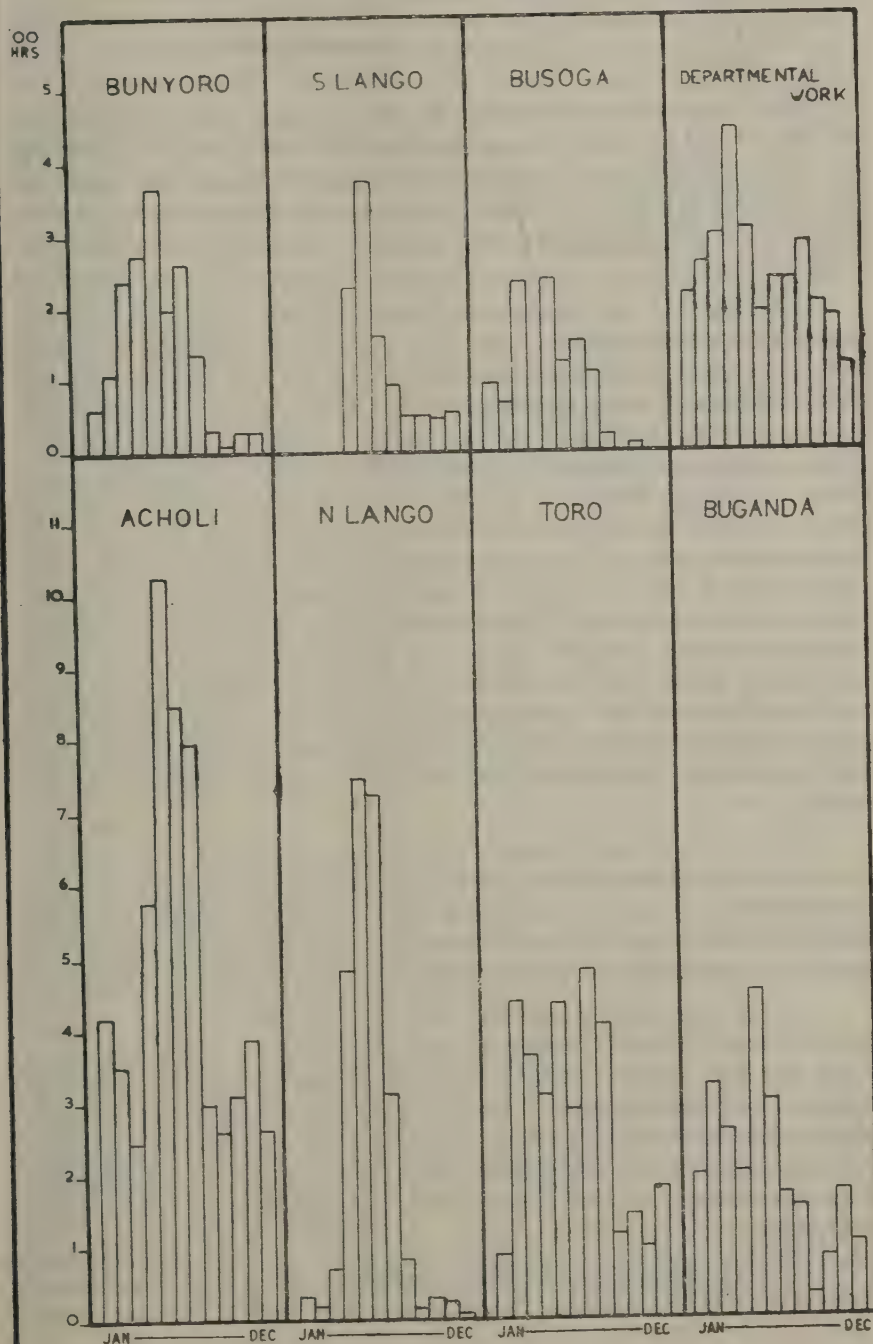
Province or District	Ploughing	Disc Harrowing and Tilling	Planting	Weeding and Ridging
Buganda	989	—	87	—
Bunyoro	588	—	—	—
Toro	745	602	—	—
Acholi (and North Lango) ..	1,581	255	—	65
Lango (South Lango) ..	127	14	—	—
Busoga	448	1	—	—
TOTAL ..	4,478	872	87	65

107. In accordance with the policy to raise hire rates to equate with operating costs, charges were increased to Shs. 50 per acre in Acholi and Lango Districts, for first and second ploughing of five acres and over, it being made clear that no contracts would be accepted for areas of less than five acres. This hire charge represented the full cost of the work to the section. Parallel increases were made for other cultivations. No increase in hire charges was made in other parts of the Protectorate.

108. Operating with fixed overheads for the full twelve months of the year, but with work concentrated into less than half that period, it is obvious that short of reducing staff during the slack season and recruiting again when required, the only way to reduce costs is to spread work over a wider range of operations. In pursuance of this policy, over 5,000 hours of work were done on transport, earth-moving and road-grading. The chief demand for these services was at the Acholi centre where 3,078 hours of work were done. Wheeled tractors only were used for all the above operations.

TRACTOR HIRE SERVICES. 1956

MONTHLY HOURS WORKED BY AREAS



109. The Section also operated three Caterpillar tractors to provide a bush clearing service where required. The following are the details of hours worked on bush clearing :—

<i>Type</i>	<i>Hours</i>	<i>Operational Area</i>
D.8	524	Buganda Province
D.6	219	Bunyoro District
D.4	322	Buganda Province

110. The total revenue earned by these tractors during the year was Shs. 64,499 and the total amount earned by all tractors for all operations was Shs. 356,032. In addition departmental work to the value of Shs. 59,548 was done at investigational farms run by the Section, and in the development of the new section headquarters and training school at Namalere.

111. *Purchase of Tractors by Farmers.*—In Acholi District one progressive farmer purchased his own tractor and ancillary equipment during the year. The tractor was used mainly for opening and preparing land for tobacco growing and some contract work was done for neighbouring farmers. At the end of the year arrangements were nearly complete for a second tobacco farmer in Acholi District to buy a tractor, and implements. In Lango District a group of farmers own a tractor, equipped with a mounted plough, and is concentrating on cotton growing. The group operated near the new mechanical cultivation unit in South Lango which assisted with maintenance work. During the year, preliminary arrangements were made in Toro District for the Busongora Co-operative Union to organise a tractor hire service for co-operative societies in the area. It is hoped that the Union will purchase a tractor and ancillary equipment in early 1957. In Buganda, where there is a considerable number of privately owned tractors, difficulty was experienced by the owners in paying for spares and maintenance and the number kept in running order was small.

112. *Investigational Farms.*—The Section maintained small management farms designed to develop systems of farm management which include the use of tractors and which are likely to show profits for group farmers or fairly large individual farmers. The farms also enable local trials and demonstrations of implements and equipment to be made.

113. Ssege Farm, which was taken over in 1953, is run as a typical African farm. Particular crops are not costed but the farm is run on a profit and loss account. The farm hires its tractors and equipment as would an individual farmer. Labour is kept to a minimum. The results suggest that the independent African farm is more efficient than a Government farm operated by paid labour. The farm is, of course, bound by the wage structure applicable to Government employees in respect of its supervisory staff.

114. It is proposed to develop Butasindirwa Farm as the mechanised proving farm of the Section. An attempt will be made to perform all the

main farm operations, including harvesting and subsequent operations, where practicable, by machinery. During the year the farm was utilised for farm management studies and was also the base for the contract hire service in Singo County of Mengo District.

115. The small farm at Kagongo which is on very acid soil, was closed down during the year, but it remained the base for the tractor hire service in Kyagwe County of Mengo District. The management farm at Ikulwe, which was taken over from the Busoga Farms, when that project was terminated in 1954, suffered from severe damage by game, and consideration is being given to closing it down.

116. *Machinery Testing*.—During the year a number of new ploughs were tested with a view to improving the standard of ploughing. If weeds and surface crop residues can be completely buried, it should be possible to eliminate one operation in seed-bed preparation. In most countries where farming is highly developed, the mould-board plough is used because of the high standard of its work, particularly in burying weeds and grass. Trials showed that the mould-board ploughs tested could deal with grass up to two feet high, but it was very doubtful whether they could cope with anything taller. It was also found that these ploughs required a very much higher standard of technical skill to achieve a correct setting than the average disc plough. In speed of work the disc plough was far superior. In Acholi District, for instance, a Ferguson 10" furrow mould-board plough averaged 3.65 hours per acre, whilst a two-disc plough by the same firm averaged 2.34 hours per acre. The cost of maintaining mould-board ploughs is also higher, owing to more frequent breakages. The conclusion reached was that there might be scope for using a mould-board plough on departmental farms, but for contract work the disc plough must be the choice. Of the new types of mounted disc ploughs tested, most promise was shown, under Buganda conditions, by the Massey-Harris No. 352 three-disc plough. Other implements tested included disc harrows, a groundnut planter and a hand operated finger millet drill; these implements are still under trial.

117. In 1957 the Section will extend its experimental activities in co-operation with the Implement Testing Unit, which is to be established at Nakuru in Kenya under the auspices of the National Institute of Agricultural Engineering, and which is designed to meet the needs of the three East African territories in implement testing.

118. *Namalere*.—In 1955 the Namalere Estate of 200 acres, situated some two miles from Kawanda Research Station, and ten miles from Kampala, was bought as a site for the headquarters of the Special Development Section. The new headquarters will include staff quarters for members of the Section, office and administrative accommodation and workshops for the maintenance of the Section's tractors and machinery, and also a school for the instruction of tractor drivers in the operation and maintenance of tractors and agricultural machinery. The school will train the Section's staff, but its main function is to instruct farmers who wish

to operate their own tractors and their drivers in the use and maintenance of mechanical cultivation equipment.

119. During 1956, the sites for the buildings were cleared and a start was made with opening up part of the estate as an experiment and training farm. Despite unforeseen delays in construction of the various buildings it is expected that the station will be ready for occupation early in 1957.

(h) OX-DRAWN EQUIPMENT

120. Ox ploughing is customary practice in certain parts of the country, and it could be extended to new areas where cattle are kept but not used for draught purposes. At the same time the range of ox-drawn equipment could be widened to include an assortment of ancillary implements. Ox-drawn implements will be complementary to mechanical cultivation for such operations as harrowing, planting and inter-row weeding, after the tractor has done the preliminary opening up of the land, and no conflict between methods of draught is expected.

121. With the aim of extending the use of oxen for draught a post of Field Officer (Ox Cultivation) was included in the departmental establishment with the specific duties of arranging training for African ploughmen and ox drivers, at suitable centres, and of selecting the most suitable ox-drawn implements for use by African farmers. Unfortunately, a suitable recruit could not be found for the post. In a number of districts progress was made in encouraging the use of ploughs and in demonstrating a wide range of ox-drawn equipment which had previously been proven at Serere Experiment Station.

122. In the Eastern Province (and particularly in Teso District) where ox ploughing is already well established, the effort was concentrated on extending the range of equipment used, and weeders, ridgers and inter-row cultivators were demonstrated at county and sub-county headquarters and at county shows. Much interest was aroused, and in Teso District 11 weeders and two ridgers and also 50 ox carts were sold.

123. In the Lango District of the Northern Province also ox ploughing is customary and there too the emphasis was upon extending the range of equipment used. The chief implements demonstrated were inter-row weeders and cultivators. Inter-row cultivation requires a more highly trained animal than those at present used by farmers for ploughing and a method of training oxen to this work was developed and demonstrated. In the West Nile District, where practically no use is made of oxen for draught purposes, an ox ploughing team was trained and did contract work. It is planned to start an ox-training centre near Arua, in 1957.

124. Demonstrations of equipment aroused much interest in Ankole District, but the local contention that an ox, once it has worked, is valueless for dowry or slaughter, may prevent the widespread use of oxen for draught.

125. At Serere Experiment Station testing of ox-drawn equipment continued. Weeding of the wider spaced row crops with the scuffer type

weeders has become the normal practice on the farm, but trials with weeders on closely spaced crops such as millet have so far been unsuccessful in finding an efficient implement for this type of work. Other implements under trial included single-furrow ploughs, ridging ploughs, harrows and two and four-wheel carts.

(i) FARM PLANNING

126. The Agricultural Productivity Committee emphasised the lack of a special advisory service for progressive farmers ambitious to raise the standard of their farming above the semi-subsistence level. To fulfil this need a Farm Planning Unit was established in 1956 with its headquarters at Soroti. This Unit is intended to be advisory and not executive. The active planning on the ground will be done by the district staff of the Department aided by locally recruited assistants trained in surveying. The Farm Planning Unit will give advice and guidance and will be responsible for the co-ordination of work between districts.

127. It is unlikely that farm planning will develop systematically by planning all farms in particular areas. It is more likely to start sporadically at the request of individual farmers or groups of farmers. In Kigezi District more than 50 farmers have asked for their farms to be planned, and also in Teso, Bukedi, Bugisu and the West Nile Districts the initial response has been favourable.

(j) BUNYORO AGRICULTURAL COMPANY LTD., KIGUMBA

128. During 1956 it became apparent that the tenant farmer scheme, despite some initial success, could not be appropriately operated by a limited liability company run on purely commercial lines, under the conditions obtaining at Kigumba. The returns obtained by the tenants from their holdings were found to be quite inadequate to meet the cost of the services provided for them by the company. The directors of the company, therefore, decided to terminate its activities from the 31st August. The residual works were, thereafter, maintained by the Agricultural Department as a purely departmental function. It has since been accepted by Government that 600 acres of the existing farm at Kigumba, together with the farm buildings, will be taken over by the Department for the multiplication of pedigree cotton seed, whilst the remainder of the 20,000 acres originally leased by the company will be used as a centre for a planned settlement which, in addition to increasing the productivity of the area, will also serve as a tsetse fly barrier. Settlement by Banyoro will be encouraged in the first place, but should the local response be small other tribes will be allowed to settle.

VI. INVESTIGATIONS

(a) BOTANY

129. *Maize*.—Selected lines of the variety "Muratha" which now carry resistance to the tropical American maize rust (*Puccinia polysora* Underw.), were tested for homozygosity as seedlings in the glasshouse,

using the technique developed by Storey and Ryland (in press). Only six out of ninety lines were shown to be homozygous for resistance and these have been bulked up to form the basis of a rust-resistant synthetic variety. Transference of resistance to the local maize type, "K.8", has continued.

130. A comparison is being made of introduced and local types. One trial of maize types from within East Africa was conducted as a co-operative trial under the co-ordination of the Specialist Committee on Agricultural Botany. Another trial was laid down to test maize types from different parts of Uganda. The outstanding performance of yellow maize from Rongai, Kenya, suggests that it would be useful in Uganda if there were a demand for yellow maize.

131. *Bananas*.—Panama disease (*Fusarium oxysporum* f. *cubense* (E.F.S.) Snyder and Hansen) was found in one new locality during the year, affecting sweet bananas in Kigezi District. The 1955 survey of banana gardens in Ankole District was repeated and showed that the disease was relatively static in these endemic areas.

132. In the trial of 60 varieties at Kawanda the level of infection remained very low. It is hoped to modify the conditions of infection in subsequent trials in an attempt to obtain more rapid assessment of disease reaction; and trials will also be made in Ankole in areas of natural infection. Preliminary work using pot-tests showed that infection can be induced under such conditions, and this technique will be further developed. Because Panama disease in Uganda differs from that in the West Indies, isolations were made from naturally infected plants in Ankole and Mengo districts. These were confirmed by the Commonwealth Mycological Institute as *Fusarium oxysporum* Schlocht ex Fr., but their pathogenicity to bananas has yet to be confirmed.

133. A collection of banana varieties from all parts of Uganda is being built up at Bukalasa. Descriptions of each are being compiled for a botanical classification, and the preparation of a field key to the varieties.

134. *Sugarcane*.—In the trial to determine the effect of planting setts obtained from cane which had been heat-treated against Ratoon Stunting disease, the following results were obtained when the plant crop was harvested, expressed as tons cane per acre:—

Variety	Heat-treated Cane	Control
POJ 2725 ..	48.8	34.4
POJ 2878 ..	40.8	29.5
POJ 2961 ..	51.7	49.4
Badila ..	41.9	29.3
Uba ..	50.1	47.0
Least significant difference ..	13.8	

135. Stocks of the more important varieties, which had been heat-treated and multiplied at Kawanda, were issued to the two estates during the year.



PLATE I

Inter-row weeding of mechanically planted maize with a "Towner Furrower" [*Special Development Section Photograph*].



PLATE II

Eradication of dense undergrowth with a "Holt" brush cutter [*Special Development Section Photograph*].



PLATE III

Mechanical planting of cotton using a John Deere two-row cotton planter [*Department of Information Photograph*].

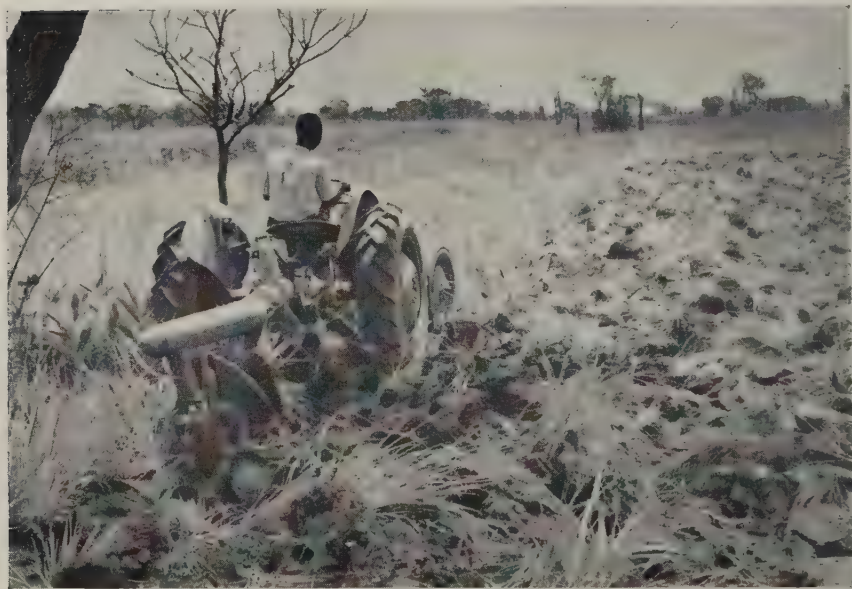


PLATE IV

Contract tractor ploughing in Lango District, Northern Province, using a Ferguson mounted disc plough [*Department of Information Photograph*].



PLATE V

His Excellency the Governor's address prior to laying the Foundation Stone at Bukalasa Farm Institute [*Department of Information Photograph*].

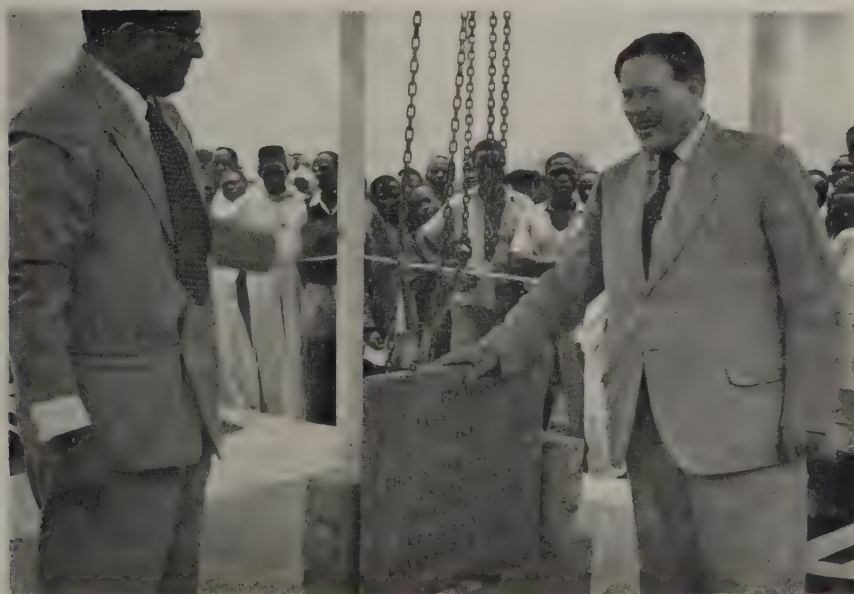


PLATE VI

His Excellency the Governor laying the Foundation Stone at Bukalasa Farm Institute [*Department of Information Photograph*].



PLATE VII
General view of Kakumiro Experiment Farm, Mubende District [*Department of Information Photograph*].



PLATE VIII
Mixed farming at Kakumiro Experiment Farm [*Department of Information Photograph*].



PLATE IX

Unsorted seed cotton in Busoga District [*Photograph by Mr. J. C. Phillips*].



PLATE X

Well sorted seed cotton in Busoga District [*Photograph by Mr. J. C. Phillips*].



PLATE XI

A well-kept banana garden in Buganda Province [*Department of Information Photograph*].



PLATE XII

Applying kraal manure to a coffee plot in Buganda Province [*Department of Information Photograph*].



PLATE XIII

Picking Robusta coffee in Buganda Province [*Department of Information Photograph*].



PLATE XIV

Selected dwarf sorghums at Serere Experiment Station [*Department of Information Photograph*].

136. Eighteen varieties of sugarcane were received from the East African Plant Quarantine Station. They were given hot-water treatment against Ratoon Stunting disease, on arrival, and then multiplied in isolation at Kawanda.

137. Ten varieties which had been received in the previous year were issued to the estates, and advice given for their testing in variety trials.

138. *Tobacco*.—A “damping-off” disease in flue-cured tobacco nurseries in the Gulu area appeared in April and became very widespread and devastating. A bacterium was isolated which was identified by Dr. W. J. Dowson at Cambridge as *Pseudomonas solanaecarum* var. *asiaticum*. Experiments on control, using a range of fungicides were carried out by the Botanist, Serere, working with the East African Tobacco Company. It was found that a thorough drenching of the beds with “Perenox” ten days after sowing, and repeated at weekly intervals from germination, if necessary, was effective in controlling the disease.

139. *Citrus*.—A collection of twenty well-known budded varieties, obtained from Kenya and South Africa, were planted in an extension of the Kawanda orchard. They will be used to provide budwood to bud on rough lemon seedlings. Budding was started experimentally in 1956 and a few hundred plants will be available for planting out in 1957.

140. *Finger Millet*.—Observations on the collection have continued. The possibility of reducing the labour required at weeding time is being investigated. An experiment suggested that it may be possible to plant finger millet in wide rows without a great reduction in yield, but with a great reduction in weeding costs.

141. The botanical status of “wildheads” (Ekitu) is being clarified. It appears that it consists of a mixture of *Eleusine indica* and a larger new species which is to be named *Eleusine africana*. The chromosome numbers of these two species are at present being determined with the assistance of the Coffee Research Unit.

142. *Sorghum*.—As with all food crops in Uganda, it is necessary to breed as much for palatability and consumer preference as for yield. With this in mind a survey of the sorghum varieties in the drier areas of Uganda has been carried out.

143. Good yielding varieties, maturing in 90 days or less, are now available at Serere Experiment Station; these are mostly dwarf. Seed will be available in quantity for district testing in 1958.

144. The breeding of varieties suitable for combine harvesting is proceeding satisfactorily. Some lines are already available but they suffer too much from bird damage. It does not appear that they will yield anywhere nearly as well as the best indigenous types, unless they are grown at a very close spacing. Close spacing will greatly increase weeding costs, unless systems of farming can be evolved which will produce clean seed beds in which a close planted crop can smother the few weeds present.

(b) CHEMISTRY

145. *Fertilisers*.—Nitrogen and phosphorus trials with finger millet and pulses at nine centres showed the same variable pattern of responses as in previous years and these were closely linked with soil type. The best responses obtained with finger millet were—a 40% increase on a 1,720 lb./acre crop at Kawanda from nitrogen plus placed phosphorus, a 151% increase on a 1,100 lb./acre crop at Serere from nitrogen plus broadcast phosphorus and a 40% increase on a 1,080 lb./acre crop at Ngetta from nitrogen alone. Responses with pulses were disappointing; the only one that was likely to be economic was a 46% increase on a 710 lb./acre bean crop at Namyoya.

146. Evidence was obtained at Serere that potassium and lime are of value but are probably not economic to apply. The role of sulphur in crop production was further studied in a large experiment on finger millet. Sulphate of ammonia gave yield increases of 25–50% while nitrogen without sulphur gave increases of only 0–20%, all on a 1,490 lb./acre control crop.

147. Three field experiments involving trace-elements were carried out at Kawanda. The first, with very late cotton, was on a micro-plot scale in which a trace-element mixture gave a dry-matter increase of 73% in the presence of ample nitrogen, phosphorus and potassium and a further 9% increase with additional lime. Close by, in a large-scale experiment, no increase was obtained in cotton yield from trace-elements in the presence of a moderate dressing of phosphorus but with a heavy application of phosphorus as ammonium phosphate in irrigation water, which only gave a 10% increase, a ground treatment of trace-elements gave a 21% increase on a 1,346 lb./acre control yield of seed cotton.

148. The beneficial effects of the mineral nutrients contained in elephant grass was proved in a cotton experiment on the old soil structure plots. Increases were obtained of 157% from ash and 83% from its equivalent as nitrogen, phosphorus and potassium fertiliser, with and without lime and trace-elements, on a low control yield of 313 lb./acre seed cotton.

149. *Soil Chemistry*.—The phenomenon of nitrate accumulation was studied intensively and shown to be due to micro-biological rather than physical factors. Sizes of populations of nitrifying and nitrogen-fixing bacteria were found to be closely related to soil type. The presence of active nitrogen-fixing bacteria in the nodules of certain legumes was also demonstrated. The essentiality of sulphur to nodulation and growth of legumes was strikingly proved at Kitale, Kenya, as a result of the diagnosis of sulphur deficiency by the routine pot-test technique at Kawanda. Fifty-three other soils were examined by this technique and widespread sulphur deficiencies were revealed, especially in soils of volcanic origin. Serious magnesium and boron deficiencies were found in many soils of the Eastern

Province and southern Buganda. At Entebbe these were manifest in characteristic syndromes in eucalyptus and cupressus trees.

150. *Soil Survey*.—All the above emphasise the close relationship of crop production to soil type but it was only this year that the systematic mapping of soil types was inaugurated. This will result in a fuller appraisal of the agricultural potential of the Protectorate. A good start has now been made with the completion of provisional soil maps of Bukedi, Busoga and parts of Masaka, Teso, West Nile and Karamoja Districts.

151. *Mineral Nutrition of Coffee*.—A detailed study was undertaken, in collaboration with the Chemist, Coffee Research Station, Ruiru, Kenya, of magnesium deficiency in both species of coffee and its inducement by heavy grass mulching and dressings of coffee husk. The ultimate cause of the deficiency proved to be the excessive build-up of potassium in the soil and the antagonism of this potassium to the entry of magnesium into the coffee roots. The deficiency in Uganda is due to the coffee husk applications as grass mulching is practised very little. Secondary iron chlorosis was also associated with excessive soil potassium.

(c) ENTOMOLOGY

152. *Insecticidal Machinery Investigations*.—Trials carried out on three engine-driven, air-blast sprayers and/or dusters showed that high pressure piston-type pumping units when used at 200 lb. per square inch need constant attention to avoid excessive leaking at hose-couplings. Much time can be saved if one of these units is used to charge a battery of pneumatic knapsack sprayers.

153. Three types of syringe knapsack sprayers, a single acting, a double acting and a double acting one with an air pressure chamber, were subjected to large-scale field trials. The first two stood up to use by peasant cultivators; they are very robust and at Shs. 100 each should prove popular. The glands of the third type were weak and it was rejected.

154. In conjunction with Fernhurst Research Station of Plant Protection Limited and African Explosives and Chemical Industries Limited, attempts are being made to develop a more suitable syringe knapsack sprayer than those already on the market for use by peasant cultivators on their cotton.

155. *Insecticidal Control of *Lygus vosseleri* on Cotton*.—The spraying period experiment was again repeated at Serere during the 1955/56 season but results have not yet been analysed.

156. District cotton spraying against *Lygus* was taken a step further and peasants were invited to buy their own sprayers. Syringe knapsack sprayers costing about Shs. 100 were recommended and fifty were sold. The total acreage of African cotton sprayed in the Northern and Eastern Provinces rose from 42 acres last year to 227 acres this year.

157. *Lygus* spraying on peasant cotton is only done at the specific request of the grower. Strict adherence to standards of cultivation is necessary and the actual applications are usually supervised by a member of the Department. No charge is made for the insecticide.

158. *Pests of Cereals*.—The survey of the stalk borers has been extended to cover most of the Protectorate. Although at least one of three species can be found in crops throughout the country at no time does the damage constitute a major factor in reducing yields. Odd scattered, out of season, plots will always be heavily attacked and rarely warrant insecticidal treatment.

159. A large ten-treatment trial on sorghum was laid down at Serere during the first rains. It was a complete failure as no stalk borer attack developed until very late. A repetition in the second rains had a light early and a heavy late attack. Although significant differences could be found between practically all treatments at the flowering stage and at harvest on a damaged stem count there were no differences in yield. All treatments proved extremely costly and would never be economic.

160. Experiments were carried out with several different seed dressings on maize, sorghum and finger millet. No control of central shoot fly (*Atherigona indica infuscata*) was obtained but promising increases in stand were obtained.

161. *Banana Weevil* (*Cosmopolites sordidus*).—A survey of the distribution of the weevil was made. It is absent from West Nile, except for one locality near Arua, and does not occur within a ten-mile radius of Fort Portal. Undoubtedly it will only be a matter of time before these areas are invaded.

162. It has been found that another weevil, *Temnoschoita nigroplagiata*, also attacks living stems. The adult of this species lives in rotting banana stems and has been known for some years but its larvæ were unknown. They are now known to live in growing plants and are readily confused with those of *C. sordidus*. *T. nigroplagiata* occurs throughout the Protectorate and is abundant where *C. sordidus* is absent.

163. The life-history of *C. sordidus*, its migration and rates of invasion of newly planted banana gardens have been investigated. Movement occurs mainly on moonless nights but is primarily influenced by rainfall.

164. Numerous local predators of the weevil have been found but they do not effect any economic control. The introduction of exotic predators has been opposed both in Bugisu and on the Buganda mainland.

165. Very promising results have been obtained from field and laboratory trials with various insecticides. Laboratory trials using the technical gamma isomer of BHC gave good control at 0.1 % but was unsatisfactory at lower concentrations.

166. Dieldrin gave a high percentage kill at the very low concentration of 0.01% with little subsequent recovery of the adults when applied as an emulsion. Applied as a wettable powder Dieldrin gave satisfactory kills at 0.0024% and upwards. Field trials with Dieldrin wettable powder at 0.6% gave a 100% kill after five weeks and subsequent trials at 0.3% look equally promising. Based on an average garden of 400 stools per acre Dieldrin at 0.6% costs from Shs. 80–Shs. 100 per acre and 0.3% Shs. 15–Shs. 40 per acre.

167. On the question of the mammalian toxicity of Dieldrin it can be stated that at the strengths applied it is no more dangerous than BHC or DDT. It is hoped that suitable low-concentration formulations will be available locally and so eliminate all danger of handling the concentrate.

168. *Pests of Stored Products*.—A survey of stored products pests and associated insects has been started. To date, collections have only been made in the vicinity of Kawanda but 51 different species have been collected. New records include *Tribolium confusum*, *Lophocateres pussillus*, *Lathridius* sp., *Enicmus minutus*, *Somotrachus unifasciatus*, *Attagenus gloriosae*, *Thoryctodes heydeni*, *Laemophloeus turcicus*, *L. ferrugineus*, *L. pusilloides*, *L. minutus*, *L. ugandae*, *Carpophilus* ? *fumatus* and *Silvanophloeus* sp. A new species closely allied to the *Laemophloeus crytolestes* complex has also been discovered.

169. A three weeks tour was made of Kenya to inspect storage conditions of Uganda produce in transit to the coast. Advisory work on the storage of food produce has been carried out in Kampala and Jinja, in collaboration with the Health Department, and in all, about 25 premises have been visited. Conditions on the whole are extremely bad and it is hoped to produce a pamphlet on the conditions desirable for the storage of food.

170. Probably the most important development in this subject in East Africa has been the discovery of an infestation of *Trogoderma granarium* in Zanzibar. This pest, once established, is very troublesome and difficult to eradicate. Legislation has been drawn up to try to exclude this pest from Uganda. A circular on the pest was prepared for inter-departmental circulation.

171. *Museum*.—A large part of the back-log of unnamed insects was sent off to the Commonwealth Institute of Entomology for identification. A list of Uganda pests, their host-plants, parasites and predators has been compiled and sent to Nairobi for inclusion in an East African pest list.

(d) COFFEE RESEARCH UNIT

172. *General Review*.—At the beginning of 1956 the Coffee Research Unit was set up to deal with the problems of the cultivation of both Arabica and Robusta coffee throughout the Protectorate. The unit is based on Kawanda, where a new laboratory block is to be built, with

a field station for Robusta coffee at Kituza in South Kyagwe, and a similar station for Arabica at Bufumbo in Bugisu. The Officer-in-Charge of the unit, the Plant Breeder, the Entomologist and the Field Officer to take charge of the Robusta Station, have been appointed.

173. *Plant Breeding—Arabica.*—It is recognised that varieties which have been selected for intensive cultivation under the conditions obtaining in Kenya and Tanganyika frequently fail to fulfill their promise when grown under peasant conditions in Uganda. A start has been made on breeding a type of coffee for Bugisu which will give consistent, fair yields coupled with sufficient vigour to withstand a comparatively low standard of cultivation. Assessment of the existing breeding stocks has shown that characters for retention of canopy exist at Kawanda, and plants from crosses made to incorporate such characters into types with high quality and yield will be ready for field testing this year.

174. A similar situation to that described above has also arisen in relation to rust resistance. Selections which have been made for rust resistance in other East African territories have failed when grown in Uganda, certainly because of the existence of other strains of the fungus, and possibly also because of the far lower standard of cultivation. d'Oliviera's work in Portugal has shown that the two strains of rust which he has obtained from Uganda differ from those from the other territories. Of the selections grown so far at Kawanda, only Rume Sudan and an Abyssinian selection have shown signs of resistance; crosses have been made to incorporate this character in standard types.

175. A further series of crosses has been made to introduce the character for large bean size shown by the Maragogipe type into Kenya selections: a number of high yielding types have been selfed.

176. *Robusta.*—A considerable number of selections from Robusta types has been accumulated at Kawanda over the years and greater selection pressure is being brought to bear upon them. Fifteen selections made on a basis of yield have been classified for quality, taking into account bean size, evenness of bean size and outturn. A variety trial of clonal material derived from single trees which have produced an average of 16 kilos annually for 15 to 17 years, was planted at Kawanda in May 1956.

177. With a rigid technique of pollination it was found that an average of 4.1% (with a range from 2.5% to 9.3%) set fruit when selfed. Of the controls, i.e., flowers emasculated and bagged, only one fruit set: thus there is reasonable certainty that the present technique of pollination is satisfactory.

178. Testing has now started on the same population of ten trees to test the compatibility between the plants in all possible combinations, including the reciprocal crosses, in an effort to evaluate the breeding system in *C. canephora*.

179. Observations on a number of other members of the Tribe Ixoreae mainly species of *Ixora*, have shown fairly complete self-incompatibility.

180. Pollen culture methods showed that there was no inhibition of pollen growth on the stigmatic surfaces of selfed flowers. Pieces of, or extracts from, the stigmatic tissue of the flowers from which the pollen was taken, stimulated pollen tube germination and growth equally with that of tissue or extracts from other trees: there appeared, however, to be an increase in swelling of the tips of the pollen tubes in response to stimulation from stigma tissue from the flower. Examination of pollen tube growth in the style showed that the lack of fertilisation on selfing was due either to cessation of growth in the style, or to failure to effect fertilisation on entering the ovary.

181. *Entomology—Coffee Root Mealy Bug.*—During 1956 a considerable number of outbreaks of Coffee Root Mealy Bug, with its accompanying fungus in the later stages of attack, were reported on Robusta coffee from Buganda. To try to get information on the conditions conducive to an attack by this pest, standard forms were supplied to the Provincial Agricultural Officer: the information obtained from these forms will be transferred to clip cards for analysis.

182. On one farm in Buganda a badly infected plot was treated in June by baring the collars, spraying them with approximately one-quarter pint of 5% white-oil, and dusting the basin around the collar with 2.6% BHC. The soil was returned to the basin after two days exposure. The plot was inspected at intervals from the time of treatment, the last inspection being on the 13th December. At this time, with the exception of two trees on the boundary of the plot, the area was free from Mealy Bug and ants.

183. Widespread outbreaks of the Root Mealy Bug were reported during the year on Arabica coffee from certain areas of Bugisu and Sebei. Trees of all ages were affected but death only appeared to ensue with trees of approximately five years and under: death took place far more quickly in Sebei. It was also found in Sebei that certain of the nurseries were heavily infested, and it is evident that the pest must have been disseminated widely by the distribution of infested seedlings. It was recommended as an immediate measure, that the soil around the collar of the trees should be treated with Agrocide 7 (2.6% BHC), and nursery beds dressed with the same chemical. A fair measure of control was achieved.

184. Although the control of the pest in the nurseries can be exercised by the use of BHC, its use on bearing trees involves the risk of loss of quality in the crop. For this reason, two trials in the Bugusege-Bukiiti area of Bugisu and one near the Kigule nursery in Sebei have been laid down to test other insecticides.

185. The weed population on the two trials in Bugisu, and that in Sebei, was sampled for the presence of Root Mealy Bug. Insects were found on the roots of a number of species provisionally identified as *Gynura* sp., *Dichrocephala latifolia*, *Ageratum conyzoides*, *Coreopsis* sp., *Erlangea tomentosa*, *Leonotis millissima*, *Galinsoga parviflora*, *Bidens* sp. At least

three different species of ants were observed tending the bugs on coffee. Collections of Mealy Bug from coffee in the various outbreaks, and from the weed species will be forwarded to the Senior Entomologist, Kenya, who has kindly offered to identify them.

186. Sample counts for berry borer (*Hypothenemus hampei*) damage have been carried out twice weekly for fresh cherry and weekly for parchment at Namalere to obtain data upon which to base a large spraying trial against this pest. A considerable body of data accumulated by the Entomology Section has also been examined to obtain information on the fluctuations of the insect population within and between seasons.

187. *Processing of Robusta Coffee*.—As is well known a considerable number of defects occur in coffee which has been processed from sun-dried cherry, which are not attributable to pests or disease. These defects are mainly of colour, “blacks” and “pales” being amongst the most common. An experiment was conducted in which the conditions of drying were varied, designated as good, intermittent and bad: drying was carried out on wire coffee trays. The freshly picked cherry was in three categories, ripe, mixed ripe and green cherry in equal proportions, and green. After drying was completed the samples were hulled. Three samples, each of 100 beans, were taken from each of the treatments and graded. Two replications of the experiment were carried out, the replication being in time. The tables below show the number of “blacks” and “pales” occurring in each of the treatments:—

Table H—Percentage “Blacks”

Maturity			Ripe	Mixed	Green
Drying—					
Good	..	..	—	1.9	26.7
Intermittent	..	..	0.2	1.0	28.0
Bad	..	..	0.7	2.7	28.4
Mean	..	..	0.3	1.9	27.7

It is evident from these data that unripe berries were the only effective cause of the production of “blacks”.

Table I—Percentage “Pales” and “Mottleds”

Maturity			Ripe	Mixed	Green	Mean
Drying—						
Good	..	..	11.1	11.1	10.7	11.0
Intermittent	..	..	10.1	11.1	12.1	11.1
Bad	..	..	22.3	20.7	12.7	18.6
Mean	..	..	14.5	14.3	11.8	13.6

At least 10% of discoloured beans were produced irrespective of the maturity of the berries but a considerable increase in the number of defective beans was produced in the ripe and mixed picks by bad drying.

188. The third category of defects was shrivelled beans, and although the percentages were considerably lower than those in the two categories detailed above, the green berries produced 5% defectives, mixed green and ripe produced 0.5%, whilst none was produced from the ripe berries.

189. It is evident from these experiments that using the drying methods available to any farmer a very considerable improvement in the quality of coffee produced from sun-dried cherry can be obtained by the simple precaution of ensuring that only ripe berries are picked. It was also found that the beans from a green pick were uniformly smaller than those from the ripe.

190. Drying methods were investigated in another series of experiments in which the basic comparison was between cement drying floors and wire drying trays; on these two factors were imposed the following treatments:—

- (1) Sheltering at night and from rain versus no shelter.
- (2) Single layer, one inch layer, three inch layer of cherry.
- (3) Turning daily versus no turning.

From the appearance of the coffee it was possible to draw the following conclusions:—

- (1) Unless great care is exercised in drying on cement floors the quality of coffee dried on trays is always superior.
- (2) Shelter from rain is essential for quality.
- (3) Drying can be carried out more rapidly on trays.

The question of turning and the thickness of the layer of cherry were only of importance when related to drying on cement floors and shelter from rain.

191. *Physiology*.—Unlike temperate orchard crops which may exhibit a markedly biennial bearing habit, populations of Robusta coffee approximate to a three-year rhythm of bearing which may, however, be varied by factors at present unknown. Observations are being carried out on four branches from each of a number of trees, which have produced their first crop after coppicing, in an attempt to relate seasonal vegetative growth to the bearing cycle and to climatic factors.

192. As an essential to any study of the water relations of a plant, preliminary trials are being made to obtain indications of the water stress of individual trees in response to climatic variations. It has been found that there are measurable diurnal variations in the diameter of individual leaders, superimposed on the normal increase due to growth, and that these are correlated apparently with climatic variations. It is hoped to develop a manometric method of measuring the changes in stem diameter, with a single apparatus which could remain attached to the tree permanently.

193. To provide clonal material for variety trials with Robusta coffee, a simple method of rooting cuttings has been developed. Under favourable conditions the cuttings have rooted in four to five weeks, with 60%–100%

success. The number of cuttings rooted has varied, however, with the time of the year at which they were taken.

(e) AGRONOMY

194. *General*.—The Senior Agronomist, appointed on the recommendation of the Agricultural Productivity Committee, spent the year surveying the farming systems practised in Uganda. In a country of great diversity this was a complex task, but it is imperative first to review current practice to form the basis for future planning.

195. *Pasture Agronomy*.—Work on pasture agronomy, which is centred on Serere Experiment Station, continued to make steady progress. Much work was done in the past, but it is only in the last two years that staff has been available for intensive studies. A number of superior strains of grasses have been selected and several grass legume associations have been successfully grown. There are indications that they may prove beneficial both to productivity of the pastures and to the yields of the following arable crops. The work is, as yet, only in its preliminary stages and much closer enquiry will be necessary before precise information on these issues will be available.

196. Studies on the harvesting of grass seed and establishment of planted pastures have given useful results and plots planted from seed are promising. In earlier tests establishment of many grasses from seed has rarely proved successful, but now, even low seed rates drilled with a planter have given good stands with a number of species, including *Melinis minutiflora*, *Hyparrhenia rufa*, *Panicum maximum* and *Chloris gayana* (Giant Rhodes Grass).

(f) LIVESTOCK

197. Major breeding herds of indigenous cattle were maintained at Serere Experiment Station, Kawanda Research Station and at Ngetta Experimental Farm. Small herds were also kept at six subsidiary centres. No important changes were made in the breeding policy or management except at Serere, where the practice of milking twice daily and rearing calves on the bucket has been substituted by a semi-range system of management. Under this system the cows are milked out in the morning with the calf in attendance and then allowed to run with their calves until the evening when the calves are separated until the following morning. Allowing 90 gallons of milk as the amount taken by the calf during the lactation, the culling level for milk is now 110 gallons in addition to the calf's requirements. From a detailed examination of the herd records conducted during the year, the beef potential of the herd, in terms of live-weight and earliness of maturity, appears to have been satisfactory for the breed, the average weight of steers at five years being 736 lb. On the other hand it has not been proven that the herd bulls used have improved milk yields of their progeny. The policy of line breeding has, therefore,

been abandoned and it is now proposed to widen the field of selection by combing the short-horn zebu areas for heifers known to have a high potential for milk yield.

VII. STAFF

198. In 1956 the staff of the Department was increased by the appointment of one Senior Agronomist, two Principals for the main Farm Institutes, two Entomologists and three Soil Surveyors. In addition to the above a Cotton Breeder from the staff of the Empire Cotton Growing Corporation was posted to Serere Experiment Station. At the end of the year a number of vacancies remained unfilled. These included four Agricultural Officers and four Field Officers for the field staff and one Senior Entomologist, one Senior Botanist, two Botanists, one Chemist and one Agronomist for the Research Division.

VIII. ACKNOWLEDGMENTS

199. Once again I have pleasure in acknowledging the assistance and co-operation which this Department has received during the year from both official and unofficial bodies and other departments of Government. I would like to thank, in particular, members of the Cotton and Coffee Advisory Committees and members of the Ministry of Natural Resources. Finally, I would like to thank all members of my staff for their hard work and loyal support.

200. In December Mr. A. P. G. Micheltore, Senior Entomologist, left Uganda on retirement after a long and distinguished career in the Colonial Service, which included ten years' service in this Protectorate. His wide knowledge of entomology of Uganda and his helpful advice to many members of the Department will be sadly missed.

ENTEBBE,

30TH MARCH, 1957.

J. G. M. KING,
Director of Agriculture.

UGANDA RAINFALL, 1956

Station	Jan.	Feb.	March	April	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
ARUA	Total: ins. Days	3-23 7	1-79 8	10-26 10	11-15 10	8-13 16	5-98 14	10-40 17	6-27 11	7-12 14	3-62 6	1-21 5	69-16 118
	Mean: ins.	0-67	3-22	5-47	5-84	4-86	6-04	7-60	6-62	7-15	3-97	1-68	55-04
GULU	Total: ins. Days	0-27 4	2-17 9	4-12 10	11-29 22	5-44 17	2-05 12	12-34 19	5-06 19	7-11 20	1-44 5	2-16 8	61-47 163
	Mean: ins.	0-44	1-71	3-32	6-82	5-75	6-62	8-98	6-85	6-43	3-68	1-79	60-28
LIRA	Total: ins. Days	0-92 8	2-58 5	4-39 12	9-83 18	3-24 10	5-07 9	9-43 17	5-53 17	7-34 16	1-19 2	1-71 5	56-18 132
	Mean: ins.	1-03	1-41	3-39	6-74	5-19	5-16	8-75	6-49	5-67	3-01	1-60	55-66
MOROTO	Total: ins. Days	1-20 4	1-35 4	3-30 6	7-74 17	2-95 5	4-45 8	4-03 7	1-52 4	1-62 2	0-00	0-00	36-11 27
	Mean: ins.	0-30	1-21	2-59	4-99	3-41	5-46	4-39	2-11	1-84	1-73	0-91	34-83
SOROTI	Total: ins. Days	0-72 7	0-77 3	1-00 6	10-47 18	6-57 11	3-62 12	7-14 13	4-26 11	7-78 16	2-13 4	0-71 1	56-69 119
	Mean: ins.	0-73	1-92	2-78	7-33	5-03	4-67	7-08	5-51	4-59	2-85	1-37	51-39
TORORO	Total: ins. Days	3-79 10	2-63 9	5-02 12	15-47 22	2-47 12	0-69 5	4-80 16	5-54 14	5-03 23	1-83 12	3-25 8	55-80 162
	Mean: ins.	1-90	2-67	5-42	8-51	4-17	4-14	4-72	3-97	4-59	3-79	2-83	55-16
JINJA	Total: ins. Days	3-78 10	0-95 5	4-87 14	10-11 20	3-31 8	2-53 9	5-55 8	4-47 14	3-97 10	3-65 14	4-08 8	52-71 133
	Mean: ins.	3-59	1-75	3-82	8-33	2-40	1-77	5-16	3-79	3-27	2-82	3-18	47-28*
KABALE	Total: ins. Days	1-58 9	4-14 16	4-52 19	7-85 23	0-24 4	0-78 2	3-76 10	1-86 12	5-24 20	3-11 17	4-40 21	42-38 188
	Mean: ins.	2-26	3-57	4-64	5-31	1-06	0-83	2-11	3-86	3-88	4-09	3-40	38-68

MBARARA ..	Total: ins.	0-82	1-90	3-14	4-18	3-58	0-73	6-28	4-13	6-58	3-16	2-35	2-54	33-39
	Days	3	6	11	11	13	4	2	12	18	18	12	7-54	117
FORT PORTAL	Mean: ins.	1-55	2-44	3-80	4-75	3-05	1-00	0-86	2-52	3-95	4-09	4-52	2-88	35-41
	Total: ins.	1-19	3-39	3-47	6-20	4-39	0-76	1-92	5-06	4-69	9-59	3-37	4-19	48-22
HOIMA ..	Days	10	13	19	22	15	7	9	16	20	27	15	16	189
	Mean: ins.	1-30	2-91	5-33	7-27	5-63	3-23	2-33	4-63	7-51	8-38	6-37	2-96	157-85
MASAKA ..	Total: ins.	0-64	3-07	4-03	6-27	1-73	0-68	2-92	0-13	9-31	5-15	3-65	1-62	48-20
	Days	3	6	10	14	7	6	9	17	18	18	11	9	125
MASAKA ..	Mean: ins.	1-21	2-77	4-59	6-70	5-77	3-48	3-90	5-94	7-11	6-87	5-04	2-55	55-93
MASAKA ..	Total: ins.	2-60	1-60	5-40	5-94	1-84	0-50	1-50	1-14	3-20	2-22	2-60	3-39	31-93
	Days	8	3	6	11	8	1	2	4	4	6	13	8	74
KAKUMIRO ..	Mean: ins.	2-01	2-41	4-39	6-09	6-72	1-74	1-41	2-14	3-51	3-81	3-76	3-42	42-31
	Total: ins.	3-41	2-36	3-15	3-43	6-22	1-56	3-46	6-32	5-22	9-46	2-92	2-05	49-56
KAKUMIRO ..	Days	4	6	10	13	7	4	6	14	16	16	11	7	114
	Mean: ins.	1-42	2-32	4-48	6-57	4-10	2-84	2-86	5-41	6-84	7-14	5-35	2-77	52-10
MITYANA ..	Total: ins.	3-20	1-09	5-28	7-22	3-45	1-02	0-08	3-78	2-24	7-74	3-05	2-88	41-03
	Days	9	8	14	21	16	7	1	12	12	17	11	10	138
MITYANA ..	Mean: ins.	1-89	2-73	4-21	5-75	4-41	2-29	1-71	3-96	3-78	5-26	4-38	2-94	43-31
KAMPALA ..	Total: ins.	4-03	0-62	2-51	9-46	2-29	0-91	0-52	3-74	1-87	2-14	5-41	3-71	37-21
	Days	12	5	10	22	12	6	4	12	14	18	13	13	142
KAMPALA ..	Mean: ins.	2-30	2-18	3-66	6-46	5-98	2-55	2-32	4-24	3-80	3-91	4-65	3-29	45-34
	Total: ins.	6-51	2-72	3-38	17-97	6-57	4-36	0-12	9-63	1-02	1-68	7-69	7-42	69-07
ENTEBBE ..	Days	15	11	12	25	16	9	2	9	8	10	17	14	148
	Mean: ins.	2-70	3-41	6-12	10-32	9-73	4-57	2-98	3-07	3-03	3-58	5-07	4-52	59-10

*New Station—Average of two years only.

COTTON PRODUCTION, 1955/56 SEASON

Province and Zone	Acreage		Sales in Tons (Seed Cotton)		Yields per Acre (Seed Cotton)	
	Totals	Means	Totals	Means	Totals	Means
	1955/56	1949/50- 1955/56	1955/56	1949/50- 1955/56	1955/56	1949/50- 1955/56
BUGANDA—					<i>lb.</i>	<i>lb.</i>
Mengo	290,045	329,693	47,171	56,866	364	386
Masaka	33,141	40,383	4,846	6,424	328	356
Mubende	50,375	57,888	10,382	10,859	464	420
TOTALS ..	373,561	427,964	62,399	74,149	374	388
WESTERN—						
Bunyoro	31,004	28,035	5,337	4,578	386	366
Toro	30,560	27,254	2,892	2,783	212	228
TOTALS ..	61,564	55,289	8,229	7,361	299	298
EASTERN—						
Busoga	335,936	297,754	54,857	45,339	366	341
Mbale	349,889	325,498	32,189	30,678	206	211
South Teso ..	57,014	59,972	5,740	5,506	226	206
South Teso Segregated	33,883	33,604	4,844	4,483	320	299
North Teso ..	55,167	49,027	4,201	4,516	171	206
Usuku	13,467	14,541	1,578	1,977	263	305
TOTALS ..	845,356*	780,396	103,409†	92,499	274	266
NORTHERN—						
Lango	151,909	182,254	17,970	16,732	265	206
East Acholi and Kara- moja	50,127	41,244	7,908	4,851	353	263
West Acholi ..	39,672	36,566	6,216	5,489	351	336
West Nile	63,311	60,013	9,473	6,273	335	234
TOTALS ..	305,019*	320,077	41,567†	33,345	305	233
PROTECTORATE TOTALS ..	1,585,500	1,583,726	215,604	207,354	305	293

* These figures do not agree with provincial totals as shown in Tables III (a), III (c) and III (e) due to the fact that the boundaries of the zones listed under Eastern and Northern Provinces do not coincide with provincial boundaries. The difference is compensating and the Protectorate totals in Tables II (a) and III (a) agree.

† Similarly these figures do not agree with those in Table IV; the Protectorate totals, however, agree.

COTTON PRODUCTION—1956/57 SEASON

Monthly Plantings—Acres

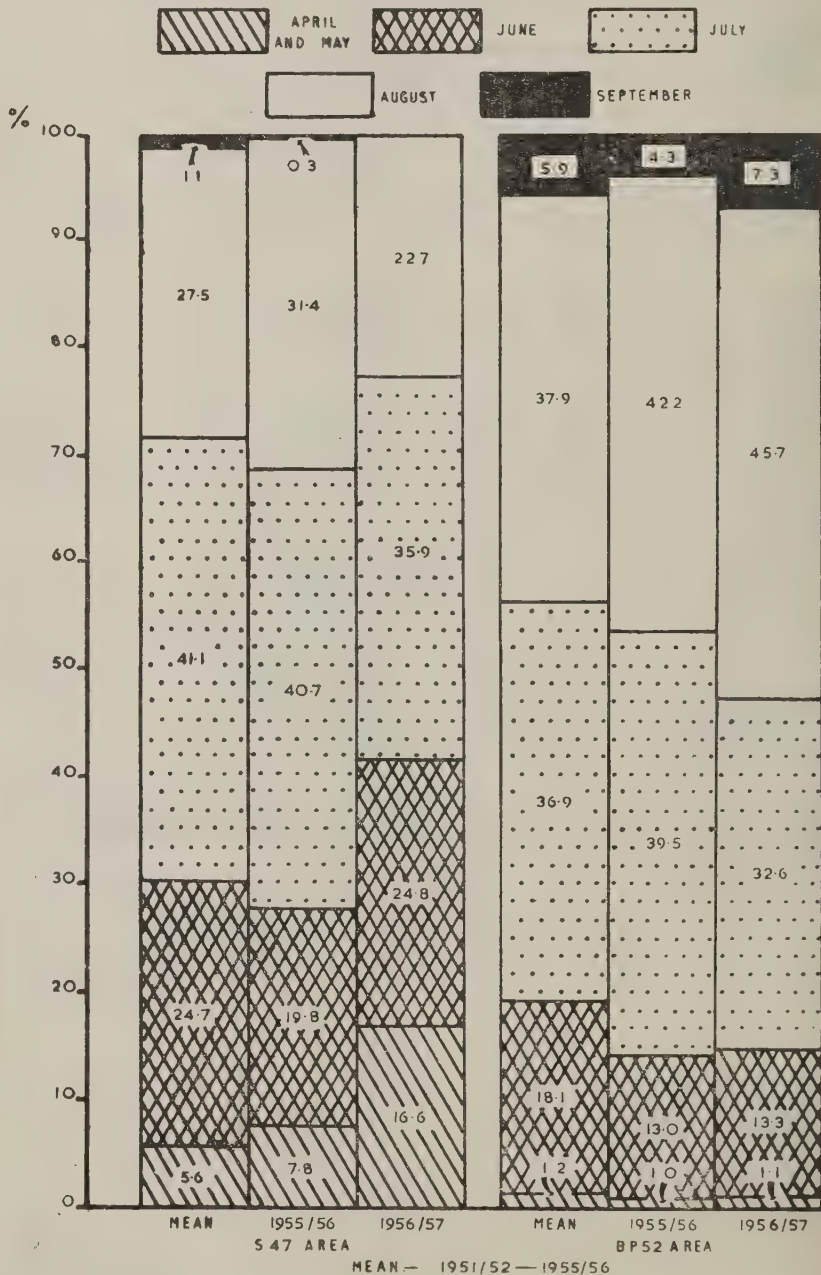
Province/Zone	April	May	June	July	Aug.	Sept.	TOTAL
BUGANDA—							
Mengo ..	—	2,767	40,232	98,298	109,040	10,112	260,449
Masaka ..	—	1,220	4,639	2,271	12,547	7,216	27,893
Mubende ..	—	209	6,307	16,090	30,166	4,884	57,656
TOTAL ..	—	4,196	51,178	116,659	151,753	22,212	345,998
WESTERN—							
Bunyoro ..	—	427	1,906	12,982	10,604	90	26,009
Toro ..	—	—	—	200	19,814	6,670	26,684
TOTAL ..	—	427	1,906	13,182	30,418	6,760	52,693
EASTERN—							
Busoga ..	196	74,441	101,479	116,432	71,544	—	364,092
Mbale ..	1,003	36,499	74,409	111,426	90,205	—	313,542
South Teso ..	2,189	16,484	11,425	15,887	8,984	—	54,969
South Teso Segre- gated ..	1,521	11,213	8,044	9,402	8,047	—	38,227
North Teso ..	1,131	19,788	17,777	21,320	8,578	—	68,594
Usuku ..	465	10,553	3,392	1,964	54	—	16,428
TOTAL ..	6,505	168,978	216,526	276,431	187,412	—	855,852*
NORTHERN—							
Lango ..	1,122	9,278	30,831	64,591	38,550	—	144,372
East Acholi and Karamoja ..	—	6,380	13,008	23,164	11,092	—	53,644
West Acholi ..	—	1,429	10,187	19,137	9,475	437	40,665
West Nile ..	—	—	19,369	36,211	19,735	—	75,315
TOTAL ..	1,122	17,087	73,395	143,103	78,852	437	313,996*
PROTECTORATE TOTALS ..	7,627	190,688	343,005	549,375	448,435	29,409	1,568,539

* These figures do not agree with those in Tables III (a) and III (e) due to the fact that the boundaries of the zones listed under Eastern and Northern Provinces do not coincide with the provincial boundaries. The differences are compensating; the Protectorate totals agree.

COTTON

MONTHLY PLANTINGS

AS PERCENTAGES OF TOTAL



COTTON—MONTHLY PLANTINGS AS PERCENTAGES OF TOTAL *Appendix II (c)*

PROVINCE/ZONE	APRIL		MAY		JUNE		JULY		AUGUST		SEPTEMBER	
	1956-57	Mean 1951-52/ 1955-56	1956-57	Mean 1951-52/ 1955-56	1956-57	Mean 1951-52/ 1955-56	1956-57	Mean 1951-52/ 1955-56	1956-57	Mean 1951-52/ 1955-56	1956-57	Mean 1951-52/ 1955-56
<i>Buganda</i> —												
Mengo ..	—	—	1.1	0.4	15.4	18.6	37.7	40.2	41.9	38.1	3.9	2.7
Masaka ..	—	—	4.4	5.6	16.6	21.6	8.1	18.7	45.0	31.8	25.9	22.3
Mubende ..	—	—	0.4	2.8	10.9	19.9	27.9	35.5	52.3	37.3	8.5	4.5
PROVINCIAL AVERAGE ..	—	—	1.2	1.2	14.8	19.0	33.7	37.7	43.9	37.5	6.4	4.6
<i>Western</i> —												
Bunyoro ..	—	—	1.6	3.1	7.3	22.9	49.9	46.6	40.8	25.3	0.4	2.1
Toro ..	—	—	—	—	—	0.4	0.8	14.4	74.2	56.8	25.0	28.4
PROVINCIAL AVERAGE ..	—	—	0.8	1.5	3.6	11.7	25.0	30.5	57.7	41.1	12.9	15.2
<i>Eastern</i> —												
Busoga ..	0.1	—	20.4	4.1	27.9	23.6	32.0	40.7	19.6	29.6	—	2.0
Mbatia ..	0.3	—	11.6	4.1	23.7	23.2	35.6	42.9	28.8	29.1	—	0.7
South Teso ..	4.0	0.4	30.0	15.1	20.8	33.9	28.9	31.5	16.3	18.6	—	0.5
South Teso Segregated ..	4.0	0.1	29.3	11.4	21.0	32.0	24.6	28.4	21.1	27.5	—	0.6
North Teso ..	1.6	0.2	28.9	14.5	25.9	36.1	31.1	32.5	12.5	16.7	—	—
Usuku ..	2.8	6.5	64.2	50.8	20.7	31.8	12.0	10.2	0.3	0.7	—	—
PROVINCIAL AVERAGE ..	0.8	0.2	19.7	6.8	25.3	25.5	32.3	39.3	21.9	27.1	—	1.1
<i>Northern</i> —												
Lango ..	0.8	0.3	6.4	2.1	21.4	23.8	44.7	45.7	26.7	27.2	—	0.9
East Acholi and Karamoja ..	—	—	11.9	3.6	24.2	23.5	43.2	48.8	20.7	23.4	—	0.7
West Acholi ..	—	—	3.5	0.7	25.1	20.5	47.1	50.4	23.3	27.2	—	1.2
West Nile ..	—	—	—	0.5	25.7	19.9	48.1	42.7	26.2	36.1	—	0.8
PROVINCIAL AVERAGE ..	0.4	0.2	5.4	1.8	23.4	22.6	45.6	46.1	25.1	28.4	—	0.9
PROTECTORATE AVERAGE ..	0.5	0.1	12.1	4.2	21.9	22.9	35.0	39.9	28.6	30.4	1.9	2.5

COTTON PRODUCTION

(Number of Bales of 400 lb., 1907-1956)

(Note: All figures are corrected to 1,000 bales)

Season	Bales (Actual)	Bales (5 year average)	Season	Bales (Actual)	Bales (5 year average)
1907	2,000	---	1932-33 ..	295,000	246,000
1908	4,000	---	1933-34 ..	286,000	271,000
1909	5,000	9,000	1934-35 ..	253,000	296,000
1910	12,000	13,000	1935-36 ..	316,000	321,000
1911	20,000	21,000	1936-37 ..	332,000	325,000
1912-13 ..	26,000	25,000	1937-38 ..	418,000	335,000
1913-14 ..	40,000	27,000	1938-39 ..	307,000	344,000
1914-15 ..	26,000	28,000	1939-40 ..	300,000	326,000
1915-16 ..	22,000	29,000	1940-41 ..	365,000	264,000
1916-17 ..	28,000	26,000	1941-42 ..	238,000	241,000
1917-18 ..	27,000	30,000	1942-43 ..	112,000	236,000
1918-19 ..	36,000	44,000	1943-44 ..	191,000	208,000
1919-20 ..	47,000	48,000	1944-45 ..	272,000	207,000
1920-21 ..	81,000	60,000	1945-46 ..	227,000	218,000
1921-22 ..	48,000	78,000	1946-47 ..	231,000	258,000
1922-23 ..	88,000	108,000	1947-48 ..	170,000	272,000
1923-24 ..	128,000	128,000	1948-49 ..	391,000	295,000
1924-25 ..	196,000	145,000	1949-50 ..	339,000	325,000
1925-26 ..	180,000	155,000	1950-51 ..	346,000	355,000
1926-27 ..	131,000	170,000	1951-52 ..	380,000	357,000
1927-28 ..	138,000	156,000	1952-53 ..	320,000	349,000
1928-29 ..	204,000	157,000	1953-54 ..	398,000	352,000
1929-30 ..	125,000	173,000	1954-55 ..	300,000	—
1930-31 ..	189,000	204,000	1955-56 ..	364,000	—
1931-32 ..	207,000	220,000			

CROP PRODUCTION

Appendix III (a)

Estimated Acreages Under Crops, 1955 and 1956—African Cultivation

CROP	BUGANDA		EASTERN		NORTHERN		WESTERN		TOTAL	
	1955	1956	1955	1956	1955	1956	1955	1956	1955	1956
Bambara Nuts	—	—	325	503	—	—	9	32	334	535
Beans, Mixed	151,753	201,633	172,624	185,102	92,597	134,382	113,595	119,006	530,569	640,123
Beans, Soya	2,042	1,737	—	—	1,020	—	1,754	3,032	4,816	4,769
Cassava	57,569	46,261	202,290	207,365	182,539	182,902	79,374	106,365	521,772	542,893
Chillies	11	—	—	—	—	—	17	32	28	32
Coffee, Arabica	1,400	2,207	17,823	19,624	389	174	5,948	5,189	25,560	27,194
Coffee, Robusta	279,954	315,379	1,273	1,358	15	66	10,323	10,901	291,565	327,704
Cotton	373,561	345,998	882,881	892,434	267,494	277,414	61,564	52,693	1,585,539	1,568,539
Gram	2,612	2,784	1,304	1,375	4,837	2,392	4	3	8,757	6,554
Groundnuts	90,869	91,535	230,225	214,985	85,401	85,844	19,042	20,793	425,537	413,157
Maize	121,148	211,487	148,915	142,132	51,027	65,731	58,474	58,178	379,564	477,528
Millet, Sorghum	33,647	61,715	152,804	169,080	160,774	190,840	183,823	171,090	531,048	592,725
Millet, Finger	25,735	24,645	712,755	723,852	341,830	279,024	138,029	150,489	1,218,349	1,178,010
Millet, Bulrush	—	—	3,002	1,605	3,908	2,958	—	—	6,910	4,563
Onions	—	—	—	—	—	—	1,760	4,470	1,760	4,470
Peas, Pigeon	—	—	2,063	1,807	217,826	164,029	1,078	667	220,967	166,503
Peas, Field	—	—	—	—	—	—	34,806	38,115	34,806	38,115
Plantains	603,500	442,044	437,517	439,049	1,235	2,284	371,887	367,760	1,414,139	1,251,137
Potatoes, Sweet	116,827	108,016	204,195	169,548	100,873	97,071	160,920	194,814	582,815	569,449
Potatoes, Solanum	—	—	4,108	2,722	—	—	10,968	8,968	15,076	11,690
Rice	—	—	1,201	649	866	1,370	2,574	93	4,641	2,112
Simsim	3,248	4,172	26,504	24,519	180,506	220,209	6,483	4,181	216,741	253,081
Sunflower	—	—	—	—	94	500	11	—	105	500
Sunn-Hemp	—	—	649	329	—	—	—	—	649	329
Tobacco, Flue-cured	—	—	—	—	2,618	2,529	201	372	2,819	2,901
Tobacco, Fire-cured	979	1,031	1	9	3,497	3,751	4,477	3,751	4,477	4,791
Tobacco, Air-cured	310	585	—	—	1,198	1,268	540	278	2,048	2,131
Wheat	—	—	100	499	—	—	1,422	388	1,522	887
Yams	—	—	59	31	—	—	—	—	59	31
TOTAL	1,865,165	1,861,229	3,202,618	3,198,577	1,697,047	1,710,987	1,268,103	1,321,660	8,032,933	8,092,453

CROP PRODUCTION
Estimated Acreages Under Crops, 1955 and 1956—African Cultivation

BUGANDA PROVINCE

Crop	MENGO		MASAKA		MUBENDE		TOTAL	
	1955	1956	1955	1956	1955	1956	1955	1956
Beans, Mixed	103,048	115,485	27,766	68,486	20,939	17,662	151,753	201,633
Beans, Soya	2,042	1,737	—	—	—	—	2,042	1,737
Cassava	38,769	33,020	6,755	7,268	12,045	5,973	57,569	46,261
Chillies	—	—	—	—	11	—	11	—
Coffee, Arabica	1,200	1,200	100	1,007	100	7,795*	1,400	2,207
Coffee, Robusta	194,460	234,630	72,930	72,954	12,564	—	279,954	315,379
Cotton	322,266	292,255	33,141	27,893	18,154	—	373,561	345,998
Grams	903	1,055	1,709	835	—	894	2,612	2,784
Groundnuts	69,380	66,372	8,069	15,893	13,420	9,270	90,869	91,535
Maize	110,568	184,088	5,622	23,752	4,958	3,647	121,148	211,487
Millet, Sorghum	19,804	35,175	8,069	20,481	5,774	6,059	33,647	61,715
Millet, Finger	18,821	16,437	—	—	—	6,160	25,735	24,645
Plantains	333,654	272,075*	194,420	2,048	75,426	20,780*	603,500	442,044
Potatoes, Sweet	85,683	79,868	19,248	16,071	11,896	12,077	116,827	108,016
Simsim	1,995	2,809	—	—	1,253	1,363	3,248	4,172
Tobacco, Fire-cured	—	—	—	—	979	1,031	979	1,031
Tobacco, Air-cured	—	—	—	—	310	585	310	585
TOTAL	1,302,593	1,336,206	378,719	405,877	183,853	119,146	1,865,165	1,861,229

*Reassessment of acreage.

CROP PRODUCTION

Estimated Acreages Under Crops, 1955 and 1956—African Cultivation

EASTERN PROVINCE

Crop	BUSOGA		BUKEDI		BUGISU		TESO		TOTAL	
	1955	1956	1955	1956	1955	1956	1955	1956	1955	1956
Bambara Nuts	..	..	..	..	..	..	325	503	325	503
Beans, Mixed	22,435	13,785	35,886	56,741	20,934	17,865	93,369	96,711	172,624	185,102
Beans, Soya	..	..	..	..	..	..	..	..	..	..
Cassava	43,762	46,751	58,678	57,791	18,640	16,485	81,210	86,338	202,290	207,365
Coffee, Arabica	..	..	..	..	17,823	19,623	..	1	17,823	19,624
Coffee, Robusta	1,273	1,358	..	..	..	..	..	..	1,273	1,358
Cotton	335,936	364,092	225,815	201,771	58,746	49,765	262,384	276,806	882,881	892,434
Grams	..	..	..	..	..	..	1,304	1,375	1,304	1,375
Groundnuts	78,857	60,440	52,032	49,988	11,465	9,831	87,871	94,726	230,225	214,985
Maize	91,355	74,335	18,785	23,339	32,524	38,576	6,251	5,882	148,915	142,132
Millet, Sorghum	..	..	..	..	..	..	126,498	133,640	152,804	169,080
Millet, Finger	1,374	1,257	14,041	25,471	10,891	8,712	299,084	312,531	712,755	723,852
Millet, Bulrush	139,280	139,549	191,629	211,608	82,762	60,164	3,002	1,605	3,002	1,605
Peas, Pigeon	..	..	..	..	..	..	2,063	1,807	2,063	1,807
Plantains	183,608	184,746	51,500	51,600	200,000	200,000	2,409	2,703	437,517	439,049
Potatoes Sweet	77,113	61,838	34,601	33,709	14,357	14,998	78,124	59,003	204,195	169,548
Potatoes, Solanum	..	..	..	..	4,108	2,722	..	..	4,108	2,722
Rice	41	6	235	56	6	8	919	579	1,201	1,649
Simsim	2,898	1,302	648	651	26	73	22,932	22,493	26,504	24,519
Sunn-Hemp	..	..	..	..	..	..	649	329	649	329
Tobacco	..	..	..	..	..	..	1	9	1	9
Wheat	..	..	..	..	..	..	..	..	100	499
Yams	..	..	..	..	100	499	..	31	59	31
TOTAL	977,932	949,459	683,850	712,725	472,382	439,321	1,068,454	1,097,072	3,202,618	3,198,577

CROP PRODUCTION

Estimated Acreages Under Crops, 1955 and 1956—African Cultivation

WESTERN PROVINCE

Crop	ANKOLE		BUNYORO		KIGEZI		TORO		PROVINCIAL TOTAL	
	1955	1956	1955	1956	1955	1956	1955	1956	1955	1956
Bambara Nuts	9	32	—	—	—	—	—	—	9	32
Beans, Mixed	15,462	22,474	8,834	9,316	56,419	56,681	32,880	30,535	113,595	119,006
Beans, Soya	1,667	3,000	—	5	—	—	87	27	1,754	3,032
Cassava	10,564	10,500	28,318	31,051	1,892	2,887	38,600	61,927	79,374	106,365
Chillies	—	—	—	—	10	11	7	21	17	32
Coffee, Arabica	3,436	2,647	—	—	314	317	2,198	2,225	5,948	5,189
Coffee, Robusta	6,291	6,659	913	1,053	415	421	2,704	2,768	10,323	10,901
Cotton	—	—	31,004	26,009	—	—	30,560	26,684	61,564	52,693
Gram	—	—	—	—	—	—	4	3	4	3
Groundnuts	6,066	9,600	5,051	2,526	1,519	3,124	6,406	5,543	19,042	20,793
Maize	4,407	5,000	6,986	4,746	27,164	28,514	19,917	19,918	58,474	58,178
Millet, Sorghum	14,683	16,874	1,189	456	163,182	147,434	4,769	6,326	183,823	171,090
Millet, Finger	41,570	41,667	17,419	13,992	51,398	74,499	27,642	20,331	138,029	150,489
Onions	729	882	119	94	648	3,171	264	323	1,760	4,470
Peas, Field	6,979	8,624	—	—	27,776	29,264	51	227	34,806	38,115
Peas, Pigeon	—	—	950	270	—	—	128	397	1,078	667
Plantains	264,163	264,983	19,120	19,202	65,963	67,497	22,641	16,078	371,887	367,760
Potatoes, Sweet	23,814	33,696	11,098	25,601	106,590	117,542	19,418	17,975	160,920	194,814
Potatoes, Solanum	147	83	7	3	10,520	8,623	294	259	10,968	8,968
Rice	—	—	—	—	1	—	2,573	93	2,574	93
Simsim	3	6	6,363	4,093	—	—	117	82	6,483	4,181
Sunflower	—	—	—	—	11	—	—	—	11	—
Tobacco, Air-cured	—	—	—	—	540	278	—	—	540	278
Tobacco, Fire-cured	—	—	3,497	3,751	—	—	—	—	3,497	3,751
Tobacco, Flue-cured	—	—	—	—	201	372	—	—	201	372
Wheat	—	—	—	—	1,135	250	287	138	1,422	388
Total	399,990	426,727	140,868	142,168	515,698	540,885	211,547	211,880	1,268,103	1,321,660

CROP PRODUCTION

Estimated Acreages Under Crops, 1955 and 1956—African Cultivation

NORTHERN PROVINCE

Crop	LANGO		ACHOLI		WEST NILE/MADI		KARAMOJA		PROVINCIAL TOTAL	
	1955	1956	1955	1956	1955	1956	1955	1956	1955	1956
Beans, Mixed	35,140	48,973	13,687	32,676	43,770	52,733	—	—	92,597	134,382
Beans, Soya	1,020	—	—	—	—	—	—	—	1,020	—
Cassava	52,249	52,761	31,596	30,503	98,594	99,538	100	100	182,539	182,902
Coffee, Arabica	—	—	—	—	389	174	—	—	389	174
Coffee, Robusta	—	—	—	—	15	66	—	—	15	66
Cotton	119,348	109,533	82,988	90,095	63,311	75,315	1,847	2,471	267,494	277,414
Gram	173	28	—	—	4,664	2,364	—	—	4,837	2,392
Groundnuts	25,961	28,014	20,972	28,010	36,968	28,020	1,500	1,800	85,401	85,844
Maize	7,869	5,859	2,131	1,941	38,527	55,831	2,500	2,100	51,027	65,731
Millet, Sorghum	75,975	78,759	40,744	52,838	24,055	22,243	20,000	37,000	160,774	190,840
Millet, Finger	*154,894	*133,190	110,347	73,834	73,589	69,200	3,000	2,800	341,830	279,024
Millet, Bulrush	—	—	1,908	558	—	—	2,000	2,400	3,908	2,958
Peas, Pigeon	*154,894	*133,190	50,000	21,058	12,932	9,781	—	—	217,826	164,029
Plantains	268	467	—	—	967	1,817	—	—	1,235	2,284
Potatoes, Sweet	20,398	17,726	28,609	18,717	50,866	59,028	1,000	1,600	100,873	97,071
Rice	310	591	54	—	502	779	—	—	866	1,370
Simsim	59,292	102,945	72,877	81,102	45,837	35,562	2,500	600	180,506	220,209
Sunflower	—	—	—	—	94	500	—	—	94	500
Tobacco, Air-cured	—	—	—	—	1,198	1,268	—	—	1,198	1,268
Tobacco, Flue-cured	19	21	942	642	1,657	1,866	—	—	2,618	2,529
TOTAL	707,810	712,057	456,855	431,974	497,935	516,085	34,447	50,871	1,697,047	1,710,987

*Interplanted

ON, 1956

Appendix IV

Values (African Production)

s to Growers)

ured)	Tobacco Flue-cured (Green Leaf)		Tobacco Air-cured (Cured Leaf)		Tobacco Fire-cured (Cured Leaf)		Total Value	
	Quantity	Value	Quantity	Value	Quantity	Value	1956	1955
ue	Tons	£	Tons	£	Tons	£	£	£
—	—	—	—	—	—	—	3,215,587	2,447,257
—	—	—	—	—	—	—	1,626,964	2,467,557
—	—	—	—	—	—	—	1,268,926	1,085,772
—	—	—	—	—	—	—	1,273,646	1,384,363
—	—	—	—	—	—	—	7,385,123	7,384,949
188	—	—	—	—	—	—	984,679	907,018
614	506	4,884	—	—	—	—	797,112	683,571
392	1,878	18,032	347	35,063	—	—	4,777	1,553
194	2,384	22,916	347	35,063	—	—	602,885	389,074
—	—	—	—	—	797	83,791	400,711	388,955
—	—	—	—	—	—	—	304,930	417,053
—	363	3,800	33	2,911	—	—	8,192	6,365
—	—	—	—	—	—	—	37,619	58,413
—	363	3,800	33	2,911	797	83,791	751,452	870,777
—	—	—	—	—	—	—	7,995,268	12,692,992
—	—	—	—	—	—	—	3,166,251	4,642,200
—	—	—	107	11,257	160	16,629	412,257	264,592
—	—	—	107	11,257	160	16,629	11,573,776	17,599,784
194	2,747	26,716	487	49,231	957	100,420	22,099,804	27,836,726

es are known with accuracy. Crops such as maize, groundnuts etc., of which considerable quantities are

74 tons hulled coffee and 238 tons dried cherry. \$35 tons hulled coffee and two tons dried cherry.

OVERSEAS EXPORTS OF AGRICULTURAL PRODUCTS, 1956

ARTICLE	UNIT	QUANTITIES			VALUE IN £		
		1954	1955	1956	1954	1955	1956
<i>Oilseeds and Products:</i>							
Cotton Seed ..	Tons	295	37	14,604	5,882	740	379,228
Castor Seed ..	Tons	7,621	3,348	1,844	320,399	132,694	105,251
Groundnuts ..	Tons	7,718	9,057	8,784	541,808	514,263	527,641
Linsed ..	Tons	48	55	—	1,920	2,742	—
Sesame Seed ..	Tons	516	80	86	40,685	6,186	5,755
Sunflower Seed ..	Tons	365	172	117	12,848	6,053	4,161
Cotton Seed Cake ..	Tons	59,782	47,770	58,635	1,559,538	1,359,519	1,537,379
Coconut Cake ..	Tons	47	60	—	985	1,400	—
Cotton Seed Oil ..	Tons	2,575	252	2,447	298,873	28,697	278,043
Groundnut Oil ..	Tons	122	11	76	17,096	1,234	9,326
Other Vegetable Oils ..	Tons	—	—	2	—	—	329
Other Oilseed Cake, Meals and other Vegetable Oil Residues ..	Tons	815	1,730	1,386	27,771	59,837	45,158
<i>Fibres:</i>							
Cotton, Raw ..	Tons	70,242	54,683	67,214	20,877,232	16,386,431	19,284,591
Sisal ..	Tons	535	619	634	31,504	35,282	39,902
Flax ..	Tons	20	34	34	2,088	3,758	2,868
<i>Beverage Crops and Tobacco:</i>							
Coffee not roasted ..	Tons	34,647	74,442	61,646	13,477,528	20,134,103	15,720,611
Tea ..	Tons	2,194	2,255	2,403	950,032	1,062,486	891,460
Unmanufactured Tobacco ..	Tons	—	51	8,870	—	8,870	—
Cigarettes ..	Lb.	106,617	121,183	106,659	9,182	10,961	10,155
<i>Spices:</i>							
Chillies ..	Tons	353	203	200	77,478	56,375	48,264
Cinchona Bark ..	Tons	—	—	4	—	—	486
Papain ..	Tons	31	24	10	48,007	29,627	18,752
Vanilla ..	Tons	3	2	2	6,540	7,383	6,639
<i>Beans and Pulses:</i>							
Soya Beans ..	Tons	1,257	2,147	331	53,754	71,246	12,092
Others ..	Tons	2,895	632	112	86,442	17,980	4,977
<i>Cereals:</i>							
Maize ..	Tons	14,400	13,422	3,173	293,595	276,576	62,541
Millet ..	Tons	10	5	—	410	168	—
<i>Miscellaneous:</i>							
Rubber ..	Tons	45	35	23	7,384	7,789	5,859
Wattle Bark ..	Tons	122	—	50	2,630	—	1,000
Ethyl Alcohol ..	Gallons	484	11,556	7,342	184	3,920	2,670
TOTAL				£	38,751,795	40,226,320	39,005,138

EXPORTS OF AGRICULTURAL PRODUCTS TO KENYA AND TANGANYIKA, 1956

ARTICLE	UNIT	QUANTITY			VALUE IN £		
		To Kenya	To Tanganyika	Total	To Kenya	To Tanganyika	Total
<i>Oilseeds and Products:</i>							
Cotton Seed Cake	Tons ..	9,900	—	9,900	19,185	—	19,185
Other Oilseed Cakes and Meals and other Vegetable Oil Residues	Tons ..	255	—	255	7,126	—	7,126
Sesame Seed	Tons ..	10	—	10	670	—	670
Groundnuts	Tons ..	102	43	145	5,014	2,195	7,209
Cotton Seed Oil	Tons ..	2,205	886	3,091	234,660	95,066	329,726
Groundnut Oil	Tons ..	70	18	88	8,023	2,241	10,264
Other Vegetable Oils	Tons ..	27	2	29	2,822	314	3,136
<i>Fibres:</i>							
Cotton, Raw	Tons ..	5	—	5	669	—	669
<i>Beverage Crops and Tobacco:</i>							
Coffee, not roasted	Tons ..	15	—	15	3,538	—	3,538
Tea	Tons ..	48	28	76	13,328	10,708	24,036
Unmanufactured Tobacco	Lb. ..	274,263	11,866	286,129	32,048	2,100	34,148
Cigars, Cheroots and Manufactured Tobacco	Lb. ..	31,704	5,994	37,698	32,057	6,334	38,391
<i>Spices:</i>							
Chillies	Tons ..	5	3	8	565	394	959
<i>Beans and Pulses:</i>							
Soya Beans	Tons ..	45	—	45	1,800	—	1,800
Others	Tons ..	1,251	362	1,613	33,764	9,425	43,189
<i>Cereals:</i>							
Maize	Tons ..	20	70	90	433	971	1,404
Millet	Tons ..	17	632	649	419	19,017	19,436
<i>Miscellaneous:</i>							
Rubber	Tons ..	30	—	30	6,852	—	6,852
Ethyl Alcohol	Gals. ..	3,903	10,821	14,724	1,009	2,750	3,759
Sugar	Tons ..	11,046	1,901	12,947	509,484	88,239	597,723
				TOTAL £	913,466	239,754	1,153,220

CROP PRODUCTION, UGANDA

Non-African Production, 1956

Crop	ESTIMATED ACREAGE		ESTIMATED PRODUCTION			
			Quantity		Value	
	1955	1956	1955	1956	1955	1956
Coffee (Robusta)	18,330	20,549	<i>Tons</i> 7,730	<i>Tons</i> 8,941	<i>£</i> 1,944,790	<i>£</i> 2,235,250
Coffee (Arabica)	3,204	3,580	784	1,259	298,321	389,980
Sugar	27,915	30,503	65,130	69,037	3,390,632	3,153,640
Sisal	7,000	7,000	669	630	39,320	29,925
Tea	10,059	11,920	3,107	3,036	1,461,546	1,122,217
TOTAL ..	66,508	73,552	—	—	7,134,609	6,931,012

POPULATION AND AVAILABILITY OF LAND

Appendix VII

Province/District	Total area <i>Sq. miles</i>	Area of land excluding open water and reserved forests <i>Sq. miles</i>	Cultivated area <i>Acres</i>	Population*	Population density <i>Per sq. mile</i>	Cultivated land per head of the population <i>Acres</i>	Estimated available land per head of the population <i>Acres</i>	Ratio of available land to land cultivated
<i>Buganda Province—</i>								
Mengo ..	14,589	10,047	1,030,897	899,596	90	1.14	7.15	6.27
Masaka ..	8,122	3,969	348,491	317,688	80	1.10	8.00	7.28
Mubende ..	2,679	2,581	113,938	84,878	33	1.34	19.46	14.52
TOTAL ..	25,390	16,597	1,493,326	1,302,162	78	1.15	8.16	7.10
<i>Eastern Province—</i>								
Busoga ..	6,876	3,399	738,486	505,998	149	1.46	4.30	2.95
Bugisu and Mbale Township ..	1,597	1,166	371,188	266,559	229	1.39	2.80	2.01
Bukedi ..	1,770	1,701	502,480	333,391	196	1.51	3.27	2.17
Teso ..	4,990	4,533	753,157	402,564	89	1.87	7.21	3.86
TOTAL ..	15,233	10,799	2,365,311	1,508,512	140	1.57	4.58	2.92
<i>Northern Province—</i>								
Acholi ..	11,176	10,703	271,908	215,655	20	1.26	31.76	25.21
Lango ..	4,898	4,519	488,889	265,890	59	1.84	10.88	5.91
Karamoja ..	11,472	10,336	51,091	125,567	12	0.41	52.68	128.47
West Nile/Madi	6,061	5,294	569,923	336,063	63	1.70	10.08	5.93
TOTAL ..	33,607	30,852	1,381,811	943,175	31	1.47	20.93	14.24
<i>Western Province—</i>								
Bunyoro ..	6,011	4,198	119,729	108,380	26	1.10	24.79	22.54
Toro ..	5,380	4,319	195,477	258,873	60	0.76	10.68	14.05
Ankole ..	6,320	5,621	385,745	400,924	71	0.96	8.97	9.34
Kigezi ..	2,040	1,757	380,478	395,529	225	0.96	2.84	2.96
TOTAL ..	19,751	15,895	1,081,429	1,163,706	73	0.93	8.74	9.40
PROTECTORATE TOTAL ..	93,981	74,143	6,321,877	4,917,553	66	1.29	9.65	7.48

*1948 Census figures

PRINCIPAL AGRICULTURAL LEGISLATION

Appendix VIII

Subject	Ordinance Number	Legal Notice Number	Short Title	Objects
Coffee	16		Coffee (Export Duty) (Amendment) Ordinance, 1956	To bring the duty payable on Arabica coffee into line with that payable on Robusta coffee. Limitation of number of coffee buying licences at markets. Establishment of coffee markets and limitation of licences. To increase processing quotas of scheduled hulleries.
		75	Coffee Industry Ordinance, 1953	
		101	Coffee Industry Ordinance, 1953	
		269	Coffee Industry Ordinance, 1953	
Cotton	2		Cotton (Amendment) Ordinance, 1956	To amend definition of good raw cotton and to empower the Director of Agriculture to direct a ginner to have cotton ginned at some other ginnery if it cannot be ginned sufficiently expeditiously to prevent deterioration. Establishment of cotton markets. Fixation of maximum prices payable for ginning and baling. To make it compulsory for cotton buyers to display dates of buying and prices to be paid for good and stained raw cotton. Establishment of cotton markets.
		14	Cotton Ordinance, 1952	
		105	Cotton Ordinance, 1952	
		239	Cotton (Amendment) Rules	
Plant Protection		253	Cotton Ordinance, 1952	Prohibition of the cultivation of <i>Eichhornia crassipes</i> (Water Hyacinth) and <i>Datura stramonium</i> . Declaration of <i>Eichhornia crassipes</i> as a pest. Prohibition of the import of <i>Eichhornia crassipes</i> . Declaration of buying seasons for tobacco leaf. Declaration of buying seasons for tobacco leaf.
		51	Plant Pest Rules, 1956	
		52	Plant Protection Ordinance	
		53	Plant Protection Ordinance	
Tobacco		205	Produce Marketing Ordinance, 1953	
		206	Produce Marketing Ordinance, 1953	

NOTE:—In addition to the above Protectorate Government legislation several African Local Government District Councils have made bye-laws providing for improved standards of crop cultivation, soil conservation and maintenance of food reserves.

DEPARTMENT OF AGRICULTURE—STAFF POSTINGS AS AT 31ST DECEMBER, 1956

A. Administrative

Title	Name	Station	Remarks
<i>Director of Agriculture</i> ..	J. G. M. King, O.B.E.	Entebbe ..	Proceeded on leave 15-12-56.
<i>Deputy Director of Agriculture</i> ..	J. T. Moon, ..	Entebbe	
<i>Deputy Director of Agriculture</i> ..			
<i>(Crop Industries)</i> ..			
<i>Assistant Director of Agriculture</i> ..	D. R. N. Brown	Entebbe	
<i>Administrative Secretary</i> ..	G. D. Badger	Entebbe	
<i>Establishment Officer</i> ..	E. B. Buckingham	Entebbe	
<i>Economic and Marketing Assistant</i> ..	A. S. Bleasdale	Entebbe	
<i>Bursar, Farm Institute</i> ..	T. Boothroyd	Entebbe	
<i>Office Superintendent</i> ..	I. S. Duncan	Bukalasa ..	Arrived 4-11-56.
<i>Office Superintendent</i> ..	Lt. Col. D. Macdonald	Kawanda	
<i>Office Superintendent</i> ..	J. E. de Souza	Kawanda	
<i>Senior Accounts Officer</i> ..	J. F. R. Lobo, M.B.E.	Entebbe ..	(Special Development)
<i>Personal Secretaries, Grade II</i> ..	Miss D. M. G. Bunge	Entebbe	
	Miss C. Hoddy	Kawanda ..	(Special Development).
	Mrs. D. I. Kenney	Entebbe ..	

B. Field Division

Title	Name	Station	Remarks
Chief Agricultural Development Officer .. Assistant Directors of Agriculture (Field)	A. D. Llewellyn-Jones .. D. F. Stewart .. Major W. H. Edwards, M.C. ..	Kawanda .. Jinja .. Kampala ..	Provincial Agricultural Officer, Eastern Province. Chief Agricultural Officer, Buganda.
Senior Agricultural Officers and Agricultural Officers ..	G. W. Anderson .. O. S. Swanson .. J. S. Arthurs .. J. C. Collins .. A. E. B. Williams .. D. J. Parsons, M.C. .. E. S. T. Marshall .. D. C. Todd .. R. G. Hampson, D.F.C. .. J. R. Low .. E. W. King .. R. B. Johnston .. R. J. Harvie .. A. G. Ouseley-Smith .. A. R. Dunbar .. C. R. Horrell .. W. Hadlow .. T. E. F. Weavind .. R. E. H. Atkinson .. A. D. R. Ker .. A. R. Humphreys .. K. M. L. Matthews .. J. C. Phillips .. L. S. Todd .. J. S. Macdonald .. O. S. Barr .. D. Innes .. E. H. Jones .. L. Green ..	Fort Portal .. Bukalasa .. Arapai .. Gulu .. Jinja .. Soroti .. Kampala .. Bukalasa .. Masaka .. Soroti .. Kabale .. Moroto .. Fort Portal .. Kigumba .. Arua .. Serere .. Gulu .. Kampala .. Kawanda .. Masaka .. Lira .. Jinja .. Soroti .. Kampala .. Arapai .. Kawanda .. Entebbe ..	Provincial Agricultural Officer, Western Province. Principal, Bukalasa Farm Institute. Arrived 18-2-56. Principal, Arapai Farm Institute. Arrived 23-10-56. Arrived 9-9-56.
Agricultural Engineer .. Agricultural Officer (Economist) .. Cotton Seed Dressing Officer ..			Proceeded on leave 20-9-56.
			Arrived 25-10-56. Arrived 8-3-56.
			Proceeded on leave 1-11-56.

B. Field Division—continued

Title	Name	Station	Remarks
<i>Principal Field Officers</i>	J. F. Low ..	Arapai	
	L. B. Ellis ..	Kawanda	
	A. G. Fennell ..	Serere	
	A. G. K. Will ..	Mbale	Seconded to Bugisu Coffee Scheme.
	J. G. Wilson ..	Moroto	
	I. L. McCumiskey ..	Bukalasa	
	W. P. Beattie ..	Mbale	
	J. G. Smithson ..	Kawanda	Seconded to Bugisu Coffee Scheme.
	A. J. S. Armitage ..		
	H. D. C. Tarlton ..	Kigumba	
	D. C. Collin ..	Kabale	Proceeded on leave 16-8-56.
	T. F. Ellis ..	Kabale	
	W. A. Kneale ..	Kabale	
	M. F. Merchant ..	Kabale	
	J. H. Miller ..	Gulu	
	V. V. Millet ..	Ngetta	
	J. K. Mintowt-Czyz ..		
	J. R. Morton ..	Kawanda	Proceeded on leave 17-12-56.
	J. B. Mott ..	Fort Portal	
	P. W. Taylor ..	Serere	
	J. Tilley ..	Lira	
	J. M. Trathen ..	Gulu	
	N. R. E. Travers ..	Kawanda	
	J. H. Woodruffe ..	Kabale	
	E. S. Mabey ..	Kabale	Arrived 4-4-56.
	K. M. I. Popiel ..		Arrived 1-8-56.
	G. Cullen-Snellings ..	Kampala	General Service Officer. Proceeded on leave 20-12-56.
	T. R. Jones ..	Serere	
		Kawanda	
<i>Mechanics</i> ..			

C. Research Division

Title	Name	Station	Remarks
<i>Chief Research Officer</i>	J. D. Jameson, O.B.E.	Kawanda	
<i>Senior Entomologists and Entomologists</i>	A. P. G. Michelmore	..	Proceeded on leave 12-12-56 pending retirement.
	W. R. Ingram	..	
	P. E. S. Whalley	..	
	J. C. Davies	..	Arrived 22-3-56.
	D. H. McNutt	..	Arrived 19-8-56.
<i>Senior Chemist and Chemists</i>	Dr. E. M. Chenery	..	
	W. R. Mills	..	Proceeded on leave 17-11-56.
	J. R. Simpson	..	
	C. D. Ollier	..	Arrived 12-1-56.
<i>Soil Survey Officers</i>	J. F. Harrop	..	Arrived 11-11-56.
	R. Radwanski	..	Arrived 30-11-56.
<i>Senior Botanist and Botanists</i>	J. F. Archibald	..	
	W. Hirst	..	
	B. J. T. Baldwin	..	
	I. Langdale-Brown	..	
	A. J. Pritchard	..	
<i>Senior Agronomist and Agronomists</i>	S. Gray	..	Proceeded on leave 13-6-56.
	A. D. H. Joblin	..	
<i>Curator</i>	C. Sandison	..	
<i>Laboratory Technologist</i>	E. W. Hughes	..	

D. Senior Assistant and Assistant Agricultural Officers

Name		Station	Name	Station	Name	Station
A. Kanya	..	Bukalasa.	J. M. Sekimpi	..	R. K. Kachope	..
H. R. Berunga	..	Mubende.	Y. E. Onaba	..	I. M. Bulikiro	..
Z. H. Kwebiha	..	Seconded.	O. L. Lalobo	..	A. G. Kibulo	..
Y. M. Kaidzi	..	Kampala.	P. Sempa	..	G. L. Kigundu	..
Z. K. Banagajja	..	Fort Portal.	Y. K. Musisi	..	H. D. Mubiru	..
P. M. Sali	..	Mbarara.	S. M. B. Mutagwanya	..	E. B. Sarulo	..
Z. K. Kateraga	..	Bukalasa.	A. A. Kalanzi	..	F. H. O. M. Zake	..
A. K. Mulera	..	Kampala.	J. B. O. Baguma	..	M. S. K. Makumbi	..
T. K. Otim	..	Seconded	H. G. N. Sernambo	..	E. J. Kalanzi	..
Z. K. Sekidde	..	Tororo.	E. D. Biruma	..	B. M. Kagolo	..
Y. K. Musitwa	..	Kampala.	Y. B. Kizza	..	Y. Yigga	..
B. Z. K. Kakoko	..	Kabale.	S. M. N. Kijambu	..	E. Rwakaikara	..
J. K. Maviri	..	Kampala.	E. Kyagaba	..	J. G. Wanyoto	..
J. M. Luzinda	..	Mbale.	J. C. Ssozi	..	I. L. Lubwa	..
P. S. Bulera	..	Jinja.	H. W. Muloki	..	S. L. Takirambude	..
J. N. Kimoiwo	..	Jinja.	S. B. Kikule	..	J. A. Wandera	..
Z. N. Wanyama	..	Tororo.	J. S. Musisi	..	D. E. Kawalya	..
S. K. Mukasa	..	U.K. Scholarship.	F. J. Luswata	..	P. F. Kunya	..
J. S. Laker	..	U.K. Scholarship.	E. B. Galukande	..	N. O. Z. Sakio	..
S. S. M. K. Sengendo	..	U.K. Scholarship.	T. R. Odhiambo	..	G. W. Gowa	..
J. N. Byagagaire	..	Arua.	R. A. Irigiei	..	P. E. K. Sibyetikerwa	..
S. K. Byakika	..	Kabale.		..		..
	..	Jinja.		..		..